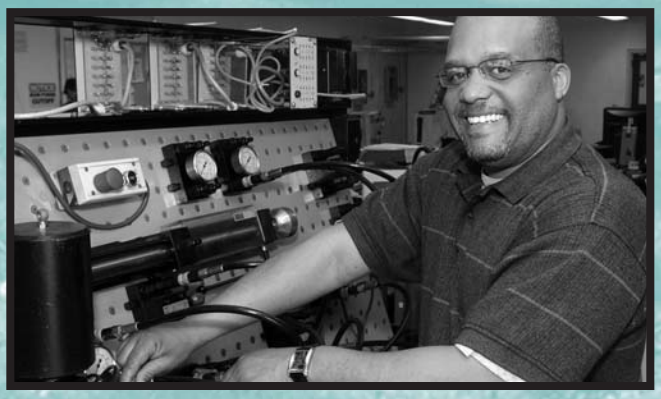
Michigan Rehabilitation Services

Michigan Career and Technical Institute

Course Catalog



Michigan Rehabilitation Services
and
Michigan Career and Technical Institute

Michigan Rehabilitation Services (MRS), within the Department of Labor & Economic Growth, operates the Michigan Career and Technical Institute (MCTI). MRS provides job preparation, job placement, job retention, and independent living services for residents of Michigan with disabilities. MRS serves more than 45,000 people with disabilities annually. It is staffed with specially trained disability and business representatives in every region of the state. One or more master's degree level rehabilitation counselors work one-on-one with individuals within their communities through a network of 35 field offices and are also on staff at each of the 100 Michigan Works! Service centers. MRS counselors refer candidates to MCTI for training as required to complete their Individualized Plan for Employment (IPE).

The MRS Mission

MRS partners with individuals and employers to achieve quality employment outcomes and independence for persons with disabilities.

Welcome to MCTI!

The Michigan Career and Technical Institute (MCTI) is your opportunity school!

A SEPARATE ENTITY FROM the traditional community college or technical school, MCTI has provided training for adults with disabilities in Michigan since 1944. MCTI offers a unique blend of caring support services and state-of-the-art job training for business and industry today. MCTI operates under the auspices of the Michigan Department of Labor & Economic Growth and Michigan Rehabilitation Services. It is one of only eight comprehensive rehabilitation training centers in the United States.

The campus — located on the shores of Pine Lake in southwestern Barry County — is fully accessible. For eligible adults who have a physical or mental disability, tuition and room and board in the dormitory are free. A career assessment service is available to help students explore career options. A full spectrum of health, psychological, and social work services is also provided. All classrooms, dormitory rooms, cafeteria, library and leisure services are located in one building for easy accessibility out of the weather. At a reasonable cost, a two- and three-bedroom housing complex and day care center are available on campus for students with children.

Depending on aptitude and interest, students may choose to enroll in one of several technical training programs. Each training area has an active Business Advisory Committee comprised of employers in that field. Their participation assures students that the curriculum and equipment meet business and industry standards. MCTI is accredited by the North Central Association — Commission on Accreditation and School Improvement (NCA-CASI) and by the Commission on Accreditation of Rehabilitation Facilities (CARF).

The MCTI Mission

The Michigan Career and Technical Institute conducts vocational and technical training programs and provides the supportive services needed to prepare Michigan citizens with disabilities for competitive employment.

MCTI Philosophy

At the Michigan Career and Technical Institute, we believe:

- A student is the most important person in our school.
- Our purpose is to provide technical training that meets the needs, interests and abilities of our students.
- Each student is an individual who has dignity and worth, and who should be treated with respect.
- It is our responsibility to provide the opportunities to develop skills that will enhance employment.
- It is our responsibility to involve business and industry in order to provide greater employment opportunities for our students.
- It is our job to promote employment through a wide range of physical, social, cultural, and support services designed to overcome barriers that may interfere with training and employment.
- It is our job to provide the knowledge, skills, and attitudes that prepare individuals for employment in a specific trade or vocation and to assist them to live independently.

Important Telephone Numbers

Main Switchboard .....(269) 664-4461. . (269) 664-5850 (FAX)

Toll Free .....(877) 901-7360 . . (269) 664-9294 (TTY)

Academic Services .....(269) 664-9334

Admissions .....(269) 664-9223

Residential Services .....(269) 664-9202

Education Center/High School Preparation .....(269) 664-9253

Financial Aid .....(269) 664-9235

Fire and Safety .....(269) 664-9560

Health Services .....(269) 664-9207

Leisure Services .....(269) 664-9259

Student Services .....(269) 664-9260

Table of Contents

History of MCTI

In the 1930s, the W.K. Kellogg Camp for disadvantaged children and children with disabilities was the first facility established on the 32-acre site on Pine Lake now occupied by MCTI. The property became a Coast Guard training site during World War II, but was leased by the state of Michigan in 1944 for the purpose of physical and occupational rehabilitation of veterans and other Michigan residents. In 1947, the W.K. Kellogg Foundation deeded the property to the state on the condition that it always be used for educational and recreational purposes, promoting the health, education, and welfare of individuals.

Through the years, the name, purpose and state agency administering the school changed several times. An administrative and training complex was added in 1970 at a cost of $1.8 million. A health/physical therapy/recreation building and new outdoor recreation area were dedicated in 1974. The Pine Lake Fund, a 501C3 non-profit organization, was established in 1981 to explore and develop new programs and promote placement of persons with disabilities attending the Institute. The school officially became Michigan Career and Technical Institute in 1995 and came under the auspices of the Michigan Department of Career Development in 1999. That year, the Pine Lake Family Center also was dedicated. In 2003, MCTI became part of the Department of Labor & Economic Growth.

Why Choose MCTI?

- MCTI accommodates most disabilities through individualized training and comprehensive services, including interpreters for students who communicate manually.
- An MCTI team works with each student to help him or her meet personal and training objectives.
- A hands-on "learn-by-doing" approach is used in MCTI's competency-based curriculum.
- Each MCTI training department replicates the modern industrial environment, standards and technology of that field.
- Skilled MCTI graduates get jobs. Over the past 10 years, MCTI has averaged an 80 percent placement rate.

Admissions

Students must be 18 years of age or older.

The majority of students attending Michigan Career and Technical Institute (MCTI) are referred by Michigan Rehabilitation Services. Students may also be referred by one of the following agencies: Veterans Affairs, Michigan Commission for the Blind, and private rehabilitation agencies.

MCTI expects that individuals who are referred to MCTI are able to manage in a way that will enable them to succeed. Suggested criteria to determine if the student is able to manage include the following: The individual...

- Verbalizes a desire to obtain employment upon training completion
- Wants to take an active role in their rehabilitation and vocational program
- Verbalizes a motivation and a willingness to learn
- Can stay on task, enabling them to complete the program within specified time frames
- Has a stabilized disability
- Seems to understand acceptable social behavior, including getting along with peers, following rules and accepting supervision
- Can live independently in the MCTI dormitory environment
- Has the potential to exercise good judgment when balancing academic, social and leisure activities
- Does not have a history of harming self or others

Note: Referrals with a Full Scale IQ score below 75 may be asked to participate in a preadmissions interview with MCTI staff to determine if the prospective student has the potential to succeed at MCTI.

If the agency believes that the potential student meets the suggested criteria, the agency sends a referral to MCTI. The referral contains the application and supporting documentation needed to verify that the prospective student has the ability to benefit from the services and training offered at MCTI.

Admission to MCTI for a Career Readiness Program, including assessment, does not ensure admission or enrollment into a vocational trade program. Each vocational trade program has specific requirements that must be met prior to enrollment.

MCTI highly recommends that prospective students make a reservation to visit the school. Tours are offered on designated Wednesdays. On these visitation days, prospective students receive an overview of all programs and tour the facility. Wheelchair and interpreter services are available on request.

More information may be obtained by calling the Admissions Office toll free at (877) 901-7360 (Voice/TTY) or by writing to: Admissions Office, Michigan Career and Technical Institute, 11611 W. Pine Lake Road, Plainwell, MI 49080-9254.

School Calendar

MCTI operates on four 10-week terms per year. The school year begins in late August/early September and runs through the second week in July. Start times are late August/early September, mid-November, mid-February, and early May. The holiday break is approximately the third week in December through New Year's. Spring break lasts one week in late March or early April. There is a short Thanksgiving break, plus two three-day weekends in January and February.

Enrollment Times

Enrollment into most MCTI training programs occurs four times a year: September, November, February, and May. Exception: new students in the Electronics, Grounds Maintenance and Landscaping are accepted in fall and spring terms only.

Enrollment in Career Assessment Services and the Step-Up program occurs every five weeks (between September and June).

Specific Enrollment Dates

Each program at Michigan Career and Technical Institute (MCTI) has its own enrollment list.

If the student has never been to MCTI, Admissions places the student's name on the program enrollment list as soon as MCTI receives and assesses the application and supporting documentation, and deems that the student has the ability to benefit at MCTI.

If the student is completing career assessment services or a career readiness program and is being assigned to a vocational trade program, Admissions places the student's name on the vocational trade enrollment list once the student has met the requirements for admissions to that program.

The actual enrollment date is dependent upon the capacity of the program, the number of returning students to that program, and the number of students on the enrollment list.

The actual enrollment date to enter a vocational trade program is also dependent upon whether or not the student enters the program on a trial basis per term, as these students typically need more direction and one-on-one instruction.

Trials are set-up for those students who do not quite meet the vocational trade program requirements, but other factors indicate that the student has the potential to succeed in that program. Career Assessment Services, Reading Clinic, and/or Step-Up staff determine whether or not the student should enroll in a vocational trade program on a trial basis.

Financial Information

The student, Michigan Rehabilitation Services (MRS), and the Federal Vocational Rehabilitation Program share educational costs for attendance at MCTI. If the student receives the Pell Grant or Federal Supplementary Equal Opportunity Grant (FSEOG) monies, it is credited to the student's account for tuition, and room and board.

Tuition, room and board are covered for all students receiving services through MRS. All non-MRS students may be eligible for financial aid to cover these costs.

The charges for tuition per term for non-MRS students are as follows (effective September 2008):
Room and Board: $1,075
Tuition: ***In-state**: $1,250; **Out-of-state**: $1,850
Student Fees (off-campus students only): $475

Career Assessment Students
Tuition: ***In-state**: $1,000; **Out-of-state**: $1,100
Student Fees (all students): $400

*In-state refers to any citizen who resides in the state of Michigan.

Financial Aid

The Michigan Career and Technical Institute participates in the Federal Pell Grant and Federal Supplemental Educational Opportunity Grant programs. The Financial Aid Office sends a financial aid packet to the student to complete. This includes a Free Application For Federal Student Aid, (FAFSA) and a MCTI Financial Aid Form. Financial aid recipients must maintain satisfactory academic progress to be eligible for subsequent terms of aid. Non-compliance will affect eligibility. For details, contact the Financial Aid Office at (269) 664-9235.

Financial Aid Verification

If the student's financial aid record requires verification, the student is required to provide all documents including proper tax returns, etc., within 30 days of notification. If the student is considered to be a dependent, the student's parent's documentation is also required. Students who do not comply may not be allowed to enroll or re-enroll.

Returning Financial Aid Recipients

Students must reapply for financial aid each academic year. At MCTI, the Financial Aid Office provides the students with the financial aid application for the next academic year. In addition, students must maintain satisfactory academic progress and not be in default status with any education loans, or owe a refund on any Title IV Higher Education Act (HEA) grants received at any institution previously attended. MCTI does not participate with any federal or state loan programs.

Financial Aid Refund Policy

MCTI's federal and institutional refund policy is the same for all students based on the academic year of 10-week terms. The refund calculation is used whenever a financial aid student or private-pay-sponsored student officially withdraws or takes an unapproved leave of absence. The Pell refund money is returned to the federal Department of Education. After the calculation reaches 60 percent, no money is refunded. This policy affects students for each term of attendance. The refund policy is based on days of attendance minus any school breaks in excess of five school days.

Graduation Requirements

To receive a Certificate of Graduation, the student must meet the following requirements:

1. Earned at least one Certificate of Completion for a program of study*
2. Exited MCTI in good standing**
3. Fulfilled all financial and property obligations to MCTI, including:
   - ❖ Payment of all tuition and fees
   - ❖ Payment of all school-imposed fines
   - ❖ Return of all school property

*If a student upgraded skills while at MCTI (earned a Certificate of Achievement), left MCTI for employment or a co-op in the trade, remains employed for 90 days and skills are verified by the student's work supervisor, the student may also receive a Certificate of Graduation.

** If a student leaves MCTI for disciplinary reasons, the director of Career and Technical Education will review the student's case and determine if the student is leaving in "good standing" or not.

Support Services

Program Managers

Each student is assigned a program manger for help in determining which support services are needed for his or her individualized program at MCTI. The student's progress is discussed during professional team meetings and on an individual basis throughout the student's enrollment in school.

Health Services

The MCTI Health Services Department offers a variety of services to enhance each student's ability to successfully complete his or her training program. The following professional staff are available to students by appointment: registered nurse, nurse practitioner, physical therapist, social worker, and substance abuse therapist. MCTI also has a contract physician for student appointments. Other referrals can be made to community providers as necessary, i.e. dentist, dietician, optometrist, etc.

Residential Services

Students at MCTI reside in comfortable dormitories, sharing suites with assigned roommates. Residential staff are on duty 24 hours a day to assist students, and work closely with the Hall Senate to make the dormitory a pleasant and safe place for students. The Residential Services telephone number is (269) 664-9202.

Client Assistance Program

The Client Assistance Program helps students by explaining rehabilitation services and benefits available. The office also assists when students have difficulties with counseling, training programs, rehabilitation facilities or independent living programs. The Client Assistance Program is under the auspices of Michigan Protection and Advocacy Services and may be reached at (800) 292-5896.

Accommodations/Assistive Technology

MCTI evaluates students and potential students regarding accommodation needs. Recommendations for accommodations/assistive devices are made to help students overcome barriers to success. Prospective students may consult with MCTI's occupational therapist prior to admission. The occupational therapist participates in each orientation session to assure that students have all reasonable arrangements in place during their training programs. Michigan Rehabilitation Services also has a center in Lansing available for assistance with occupational therapy or other accommodation issues not available at MCTI.

Campus Security

Safety and security is a priority for the MCTI community. The Fire and Safety Department provides 24/7 coverage, including all holidays. MCTI complies with the Cleary Act, a federal law that requires institutions of higher education in the United States to disclose campus security information including crime statistics for the campus and surrounding areas.

Leisure Services

The Leisure Services Department offers a wide variety of activities taking advantage of MCTI's location on 75 acres of scenic countryside, with 700 feet of accessible frontage on Pine Lake. Activities include boating, canoeing, fishing, swimming, golf, tennis, softball, biking, horseshoes, and more. MCTI also offers an Olympic-size indoor pool, fitness training,

bowling, archery, basketball, volleyball, card tournaments, expressive arts, leatherwork, ceramics, photography and guitar. Off-campus activities are planned each week, and vary from shopping and movie excursions to bike trips, local festivals, sporting events, concerts, and Lake Michigan beach parties.

Student Government

Student government is composed of three distinct branches. Each branch has a staff advisor who works closely with each group. Involvement in the student government system is an excellent way for a student to gain valuable leadership experience while attending MCTI.

Student Council

The Student Council is responsible for issues related to student activities and concerns. The Student Council has a president, vice president, treasurer and administrative assistant. The body of the council is made up of two representatives from each trade area. Student Council representatives are voted on through each individual trade and Student Council officers are voted in through school-wide elections. Student Council receives revenue through vending machine profits and laundry machine profits. Revenues are spent to improve student life at MCTI and also to contribute to local charitable organizations.

Hall Senate

The Hall Senate enables students to govern themselves and solve dormitory-related problems, issues, and policy violations, generally without staff intervention. The Hall Senate system has proved to be a valuable asset to the residential staff in maintaining a safe and comfortable environment for all MCTI students. Floor officers consist of a president, vice president, judge and a representative. The floor officers comprise the Hall Senate, which has a president, vice president, treasurer and administrative assistant. Hall Senate receives revenue through vending machine profits and the community swim program. Revenues are spent to help provide activities and programs for dormitory residents. Hall Senate also believes in giving back to the community, supporting local charities and causes.

Student Court

The Student Court hears all cases presented by students concerning disputes and violations of policy that are not handled by the Hall Courts. Students try to resolve issues first through the floor court system, handled through the Hall Senate and the floor judges. If issues cannot be resolved through the floor court system, then they can be brought to the Student Court. Student Court can issue subpoenas to students so that they have access to information necessary to make an informed decision. Student Court can issue fines and community service to students who have broken policies/rules. In extreme cases, recommendations are made to the MCTI administration.

Pine Lake Family Center

The Pine Lake Family Center adjacent to the MCTI campus is a housing and day care complex accommodating parents with children. It is owned and operated by the Pine Lake Fund. The Center has 20 housing units—10 with three bedrooms and 10 with two bedrooms. All units are smoke-free and handicap accessible, and are furnished with major kitchen appliances as well as living, dining and bedroom furniture. The day care center can care for children as young as 12 months. School-age children attend Delton-Kellogg local public schools.

The first two admission priorities go to single parents with children and married couples with children where both are students. Costs range from $310–$450 per month for two-bedroom units and $360-$550 per month for three-bedroom units, depending on income and assets. Utilities and local phone service are included. For information, reservations, and other details call (269)664-9271.

The Pine Lake Experience

Each summer, MCTI hosts a summer transition program called the Pine Lake Experience. The experience consists of two one-week summer camps for high school students interested in career exploration, team building, and recreational activities. The camp experience is open to students with physical, emotional or learning disabilities, though not all qualify. Campers should have the skills to perform their own personal care, must have an up-to-date physical exam and proof of a TB test within one year of camp. Cost of the camp is $400 per session. Scholarships are available. For details, call (269) 664-9290 or (269) 664-9260.

Placement Services

Everyone is involved in the placement process at MCTI. Students, instructors, counselors and the placement staff work as a team to achieve the ultimate goal of employment. The placement staff works closely with employers throughout the state to promote the quantity and quality of job placements.

Placement services provided at MCTI include:

- Practice applications and interviews
- Resume and cover letter preparation
- Job search videos and Internet access
- Statewide newspapers and business directories
- Leads on job openings
- Telephone and fax machine use
- Postage for direct mailings
- Transportation to interviews
- Assistance in locating housing and transportation
- Follow-up services

Most students also participate in Job Seeking Skills class offered by Placement Services staff. See the course description listed in the Employability Skills section.

Business Advisory Committees

MCTI values partnerships with business and industry. The business advisory committees at MCTI are essential in developing and maintaining technical education programs that are relevant and keep pace with marketplace needs. The business advisory committees annually review each training program's curriculum, equipment, educational materials and placement outcomes, and make appropriate recommendations for improvement.

Career Readiness Center (CRC)

The CRC is comprised of four programs: Career Assessment Services, the Education Center, the Reading Clinic and Step-Up.

The CRC programs work together to offer a variety of assessments, structured programs and employability skills classes to potential and current vocational trade students. The CRC prepares students to enter a vocational trade program that matches their skills and interests and builds employability skills prior to entering the vocational trade program and/or the world of work.

Career Assessment Services (CAS)

CAS is a comprehensive vocational evaluation program that affords clients the opportunity to develop realistic employment goals and obtain personal satisfaction through a better understanding of their personality, interests, skills, and abilities. As a holistic approach to evaluation, this program incorporates a variety of professionals including: rehabilitation counselors, rehabilitation nurses, occupational therapists, recreation therapists, social workers, teachers, and adult literacy instructors.

Enrolled for up to a five-week period, clients can expect to participate in a variety of assessments that identify their unique strengths and barriers. In addition, CAS evaluates literacy skills, employability skills, and social skills through structured evaluations in learning strategies, self management, teambuilding activities, and core mathematical concepts. Work samples and situational assessments are also used as tools in the evaluation process.

This comprehensive and holistic approach to evaluation results in realistic, individualized training/employment-focused goals. Throughout the process, clients and staff are compiling and sharing information that is used to identify next steps and potential services needed. Although CAS is a primary referral source for trade training programs at MCTI, it also works to consider potential vocational options not provided by MCTI.

Full-time participants are referred by Admissions.

Education Center (EC)

The EC is an MCTI/Delton Kellogg Schools partnership that offers students the opportunity to strengthen and improve their academic performance while enrolled in trade training. The reading program teaches students how to improve their critical reading skills, study textbooks and build their vocabulary. Special occupational math programs have been designed to assist students with trade math requirements as well as to review basic concepts. Each student's needs are identified through testing, and then a program is designed to meet individual goals. Services offered include academic testing, computer-aided reading, high school completion, remedial math and reading, study skills, and occupational math and reading.

Reading Clinic (RC)

The RC offers literacy assessment as well as a full-time adult literacy program and specific need courses.

The full-time program is designed for individuals with literacy levels below the 7th grade and an ability to benefit from an intensive multi-sensory program. It includes instruction in reading, spelling, writing, and study skills conducted in small group settings. Students who complete the full-time program may wish to enroll in one of MCTI's training programs, pursue other educational options, or seek employment.

Students throughout the school may take specific need courses. These courses are open to and are designed for students with adequately developed general literacy skills but with specific needs that can be filled by a single course. Special need courses include instruction in spelling, writing, reading comprehension, or study skills.

Full-time participants are referred from the Career Assessment Services Program or are recommended following a literacy assessment given by Reading Clinic staff. Part-time participants are referred from the vocational trade instructors or by other staff.

Step-Up (SU)

SU is a five- to 10-week pre-vocational, skill development program. The goal of the SU program is to prepare students with skills and strategies necessary to successfully participate and compete in vocational training opportunities at the post-secondary level. Students are encouraged to realistically assess their career decisions in relation to ability, needs, and expectations—and make adjustments if necessary. Course offerings are tailored to student needs and focus on improving basic math and literacy skills, study skills, computer literacy, communication, and other employability skills. Most students have a personal goal of improving their academic and workplace behaviors to the level needed to succeed in a particular MCTI vocational-trade training program.

Participants are referred from the Career Assessment Services Program or are recommended following a personal interview on campus and/or a file review by an evaluative panel of staff.

Employability Skills Course Descriptions

AC 140A: Using a Systematic Approach to Presentations

This course is for students who have a basic understanding of Microsoft Windows and possess basic reading, writing, notetaking, and organizational skills. Students learn to use a systematic approach to design, deliver, implement, evaluate, and revise a presentation. This fast-paced, project-oriented class builds confidence, and enhances students' problem-solving, critical thinking, oral communication, and study skills. The Internet and computer software tools (e.g., Microsoft Word, Paint, and PowerPoint) are used. Emphasis on implementation of project management skills and business ethics. **Topics covered:** setting priorities, meeting deadlines, managing time; selecting topics, developing questions and thesis statements, organization, Internet research, PowerPoint, Word-PowerPoint transfers, technology blunders/overkill; body language, voice and tone, audience expectations; giving and receiving feedback.

COM 101: Applied Critical Thinking

This course is designed for individuals who want to become a leader at MCTI or on the job, and for those who want or need to develop personal and work-related relationships that are free of drama. This highly interactive course focuses on concepts and skills that help participants identify and challenge their thinking, beliefs, attitudes, and values. Participants learn to control their life by taking control of their thinking. By applying the skill, participants should be able to make decisions, problem-solve, work in teams, and build healthy personal relationships more effectively. **Topics covered:** active listening, asking questions, giving feedback, paying attention to thinking patterns and feelings; stressful conversations, responding to anger, dealing with accusations, starting conversations, self-disclosure.

EC 060: Basic Computer Literacy

An introduction to basic computer concepts and various productivity and application software programs. Students with little/no computer experience become familiar using computers in a technology environment. **Topics covered:** hardware, Windows operating system, browsers, keyboarding, email, search engines, Word, PowerPoint.

EC 095: Basic Math

Students learn to master concepts using fractions, decimals, and percents in practical and applied settings. The course is individualized to meet students' specific needs as determined by a math pretest and is self-paced to match students' personal grasp and understanding of concepts. **Topics covered:** fractions, decimals, and percents; addition, subtraction, multiplication, and division.

EC 099: Kinesthetic Math

Students learn spatial relationships to help them understand math concepts. Focus is on visualizing basic fractions. Instructor uses three-dimensional objects to describe relationships among shapes to improve understanding of fractional units. **Topics covered:** meaning of fractions using Cuisenaire Rods for spatial visualization, comparing, equivalence, and ratios and proportions.

EC 100: Consumer Math

Students practice math problems related to everyday living to be better prepared to live independently. **Topics covered:** computing straight time, overtime, gross and net pay; filling out deposit and withdrawal slips for savings and checking accounts; filling out check stubs and keeping a running balance; computing inventory values; preparing a budget.

EC 113: Pre-Algebra

This course is for students who have never taken an algebra course. Focus is on basic number skills, data analysis and beginning algebra needed to pass educational and occupational tests. **Topics covered:** problem-solving, reasoning skills, data analysis, probability, spatial sense, patterns.

EC 115: Algebra

This course focuses on algebra fundamentals. Students learn beginning algebra skills to prepare for training in any technical/vocational field or testing including GED, college entrance, civil service, and military entrance exams. **Topics covered:** signed numbers and order of operations; powers, roots, and scientific notation; algebraic expressions and formulas; one-step, multi-step and special equations; graphing equations; polynomials.

EC 239: Geometry/Trigonometry

This course is for students who can solve basic math problems but need advanced math skills to work in cabinetmaking/millwork or machine technology. Students are introduced to basic geometry and trigonometry as they apply to their specific area of study. **Topics covered:** basic geometric figures, angles, triangles, circles, basic trigonometry functions, calculating sides and angles of right triangles, practical machine applications.

RC 061: Spelling

This course helps students improve low spelling ability that interferes with academic performance and/or employability. Students strengthen basic spelling skills to meet literacy requirements in the classroom and workplace. **Topics covered:** phonological awareness, sound/symbol relationships, basic spelling rules, symbol imagery, semantics.

Employability Skills Course Descriptions

RC 062: Workplace Writing

This course is for students whose low literacy skills interfere with academic performance and/or employability. Students strengthen basic writing skills to meet literacy requirements in the classroom and workplace. Focus is on the structure and organization of written language from sentence structure through multi-paragraph organization. Students learn how to apply their knowledge of written language to improve comprehension of personal, professional, and academic text. **Topics covered:** word order and usage, sentence structure, paragraph organization, structure and organization of personal, academic, and workforce literacy tasks.

RC 063: Reading Comprehension/Study Skills

This course is for students enrolled in or hoping to enroll in an MCTI trade program. Focus is on how to approach learning using multi-sensory strategies that complement an individual student's learning ability. Students acquire the strategies they need to become more efficient and effective in the classroom and at work. **Topics covered:** expository vs. narrative text structures, reading comprehension strategies, writing strategies, vocabulary, notetaking.

SU 065: Internet & Email Applications

This course is for students who already have a basic understanding of Microsoft Windows and possess basic reading, writing, notetaking, and organizational skills. Students learn strategies for conducting effective searches and using email applications to enhance communications. Problem-solving and analytical skills are key. **Topics covered:** varies based on the individual educational learning plan and student interest. May include research and investigation of issues such as: company policies on Internet use, netiquette, email communication mistakes, website evaluation, and use of online resources.

SU 066: Introduction to Microsoft Word

This course is for students who already have a basic understanding of Microsoft Windows. Students learn how to ask the computer for help, use common mouse, toolbar and keyboard shortcut commands, file management and use of the basic features of Microsoft Word. **Topics covered:** basic file management, editing, formatting, using tools, graphics.

SU 067: Introduction to Microsoft Excel

This course is for students who have previous exposure to Windows, but limited or no experience with spreadsheets. Students with experience using the Internet, mathematical concepts, and basic reading skills are preferred. Course competencies are modeled after the Microsoft Office Specialist Skill Standards for Excel. Students work independently or with classmates on assigned projects. Emphasis on utilization of all available resources to accomplish projects. **Topics covered:** file management, editing, formatting, formulas and functions, tools, charts and graphs.

SU 068: Introduction to Measurements

This course is designed for students preparing for trades where measuring is required. Emphasis is either placed on using a ruler or tape measure and/or on measurement of capacities. **Topics covered:** Measuring half, quarter, eighth, sixteenth inch with a ruler or measuring tape; reducing fractions to lowest terms; and/or fluid ounces, cups, pints, quarts, gallons; converting measurements; applying measurement skills.

SU 077: Self-Management

This course helps new students succeed at MCTI and on the job. Students learn how to effectively "work as a team" with others of diverse backgrounds; draw on individual team members' strengths through constructive communication and professional courtesy; improve interpersonal and employability skills, and professional relationships; manage confrontations, handle problems, and deal with people. **Topics covered:** goal setting, developing an action plan, time management, completing work on schedule, following rules/regulations/directions, accepting responsibility for self success, teamwork, respecting differences, honesty, and integrity.

SU 078: Learning Strategies

An introduction to reading, writing, and study skills needed for effective learning. Focus is on learning how to learn. Students become more reflective learners — better able to comprehend and express ideas in ways that enable them to be more successful handling literacy demands in school and the workplace. **Topics covered:** expository vs. narrative text structures, reading comprehension strategies, vocabulary, notetaking.

Employability Skills Course Descriptions

SU 082: Data Driven Decision Making

This course is for students who have basic reading, writing, and organizational skills and is recommended for those entering the workforce or independent living for the first time. Focus is on how to pull out information when reading, writing responses to gathered information, requesting additional information, organizing information, making informed decisions to create goals and a budget, finding a job, and running life smoothly. **Topics covered:** pulling information from business forms, memos, letters, graphs, pie charts, bulletins, notices, letters of information and confirmation, transportation schedules and contracts, instructions.

SU 083: Project Driven Decision Making

This course is for students who have basic reading, writing and organizational skills and who know how to apply these skills in various workplace or life situations. Focus is on learning and applying basic economics in daily life. **Topics covered:** goods and services, resources, supply and demand, auctions, bartering, money, small business, profit and loss (P&L statements); spread sheets; the Federal Reserve; and "living on what I make."

SU 084: Locating Information and Data Skills

This course focuses on how to locate, read, and interpret information and data from graphs, maps, schedules, charts, and budgets. Students practice with various information used in the workplace, gain an understanding of estimation, and use mental math to forecast informational trends. **Topics covered:** pictographs, circle, line, and bar graphs; geographical, directional, and informational maps; plans, schedules, flowcharts, gauges, budgets, and estimation.

SU 085: Measurement and Application

A beginning measurement class and review of basic measurement skills. Students learn concepts of using rulers, tape measures, and calipers in plane and linear measurement settings. **Topics covered:** measuring length in customary and metric units, using linear measurement tools and converting linear measurement; using basic geometry in plane figures and figure comparison, measuring area, volume, perimeter.

SU 086: Simple and Decimal Fractions

A beginning math class and review of basic arithmetical skills. Students master the concepts of using decimals in computational and applied math settings. Individualized lessons meet the specific needs of each student as determined by a math pretest. **Topics covered:** decimal fractions, comparing, ordering, rounding decimals; adding, subtracting, multiplying and dividing decimals; multiplying and dividing decimals by 10 and 100.

SU 087: Percents, Ratios, Proportions

A beginning math class and review of basic arithmetical skills; use of percents in computational and applied math settings. Individualized lessons meet the specific needs of each student as determined by a math pretest. Lessons may cover adding, subtracting, multiplying or dividing of percents. **Topics covered:** percent concepts, ratio concepts, ratio, proportion and percentage computation, percent conversions, converting percents less than one percent to decimals, converting percents greater than 100 percent to decimals.

SU 088: Using Fractions

A beginning math class and review of basic arithmetical skills; using fractions in computational and applied math settings. Individualized lessons meet the specific needs of each student as determined by a math pretest. **Topics covered:** meaning of fractions, equivalent fractions, multiples and common denominators, comparing fractions, improper fractions and mixed numbers; operations of addition, subtraction, multiplication, and division of fractions.

SU 089: Applied Mathematics

A math application class using basic arithmetical computation skills to solve applied mathematical problems. For students entering occupational trade training or continuing in college courses. The scientific calculator is used to solve problems involving combinations of arithmetical operations. **Topics covered:** arithmetic of integers and decimals, fractions, ratios, proportions, percents, integer bases, exponents, order of operations, scientific notation, measurements, conversions, percentages, rates, and solving problems with algebra.

SU 092: Business Skills

This course improves students' business writing skills and skills in locating information on jobs, job applications, and job interviews; understanding employee benefits and obligations. **Topics covered:** listening for information, following oral directions, understanding details and signal words, improving observational skills; memory skills, visualization, sequencing, recognizing main ideas, context, details; sentence structure, writing mechanics, organizing ideas, reading for details.

Employability Skills Course Descriptions

SU 093: Job Search Preparation

This course is designed to prepare students to conduct a job search, use the Internet to find potential jobs, and post a created resume. Students create or fill out job search letters/forms, use the computer to produce documents and a job search related presentation, set up an interview and participate in interviews with trade instructors. **Topics covered:** job search skills, applications, cover letters, resumes, thank you letters, interviewing techniques, presentations, keyboard, Internet, basic word processing, basic PowerPoint.

Job Seeking Skills

This course is designed to help the student conduct a successful job search. The course introduces the student to the job search process and techniques/methods to overcome employment barriers. Students are informed of available placement services and career resources. Students complete individualized placement; identify specific job search challenges/concerns; complete a practice application and develop a new or updated resume. Workshops with employers, community representatives and former students periodically supplement class. **Topics covered:** applications, networking/direct contacts, phone use, self marketing, resumes, cover letters, thank you letters, identifying and articulating key skills, interviewing, follow-up strategies, employer expectations/concerns, job-retention strategies, disability disclosure, WOTC, Second Injury Fund.

Automotive Technology

Curriculum Guide

Program Description

Along with established academic and hands-on training, MCTI's Automotive Technology Program operates like a small repair and auto parts business. All students are trained in basic shop practices and have hands-on experience working on vehicles.

Students may train in the diagnosis and repair of brakes, suspensions, electrical, heating/air conditioning, and engine performance systems, working toward state of Michigan and national (ASE) certifications. The program is based on the National Automotive Technicians Education Foundation (NATEF) competency standards.

Students may also focus on the customer service side of the auto parts business. These students practice basic cataloging, inventory management, and merchandizing skills. These students must complete a five (5) week work internship.

Program Admission Requirements:

- Interview with instructor prior to acceptance
- Valid driver's license

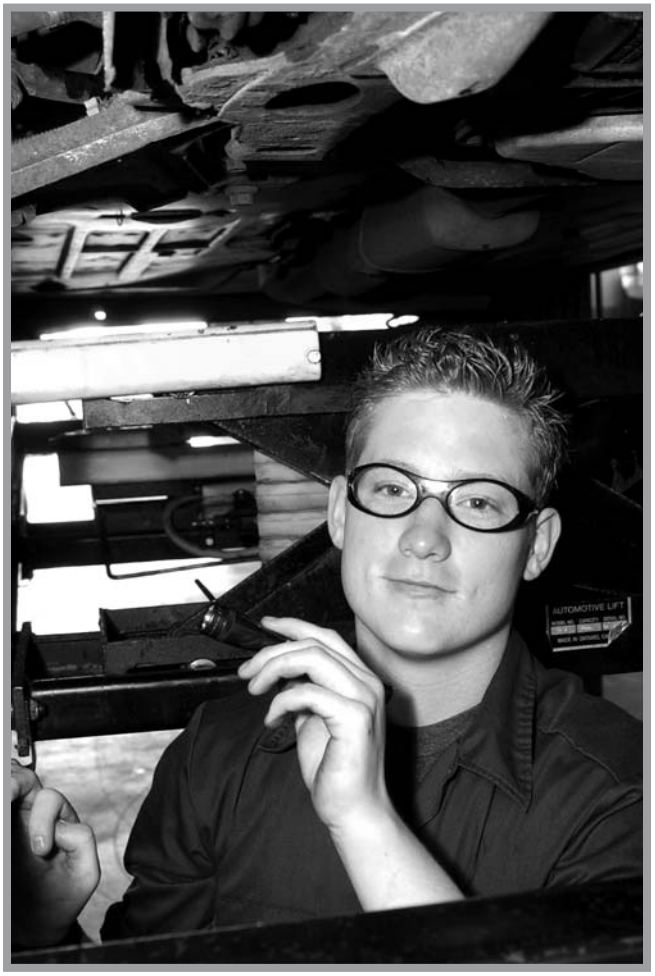
U.S. Department of Labor Occupational Profile:

Students who most closely match the occupational profile for an automotive service technician are selected for enrollment. See Appendix for definitions.

- **Aptitude/Abilities:** Average verbal and numeric skills; average spatial, motor coordination; high manual dexterity, mechanical reasoning and ability to problem solve; interpersonal communication; strong learning ability, computer literate.
- **Educational Level:** 4
- **Environment:** Loud, exposure to fumes
- **Physical Demands:** Medium
- **Temperament:** Ability to perform a variety of tasks, make judgments, and do precision work.

Certificate of Completion Programs:

- General Maintenance Technician
- Suspension/Steering Technician
- Brake Technician
- Automotive Electrical Technician
- Engine Performance Technician
- HVAC Technician
- Auto Parts Specialist



The Automotive Technology Department issues seven (7) certificates. Students take core courses in the first term. During the middle of the first term, students will, based on interest and abilities, be directed toward the automotive technician track or the auto parts specialist track.

Students in the automotive technician track may be in the program up to six terms. At the end of each term, the instructor invites those students who demonstrate academic progress by maintaining a grade point average of 2.0 or better and good employability skills, to advance to the next term. Advancement beyond the third term requires successful completion of a state of Michigan mechanic certification test, a 3.0 or better grade point average, and good employability skills.

Students in the auto parts track earn the Auto Parts Specialist certificate in two terms, which includes a five-week internship.

Automotive Technology
Required Courses for Certification

Students must demonstrate academic progress (satisfactory grade point average) and good employability skills to advance from term to term.

General Maintenance Technician

Course #	(First Term)	Credits
AT 110B	General Maintenance Tech I	3.5
AT 111A	General Maintenance Tech II	3.5
AT 112A	General Maintenance Tech III	5

Brake Technician

Course #	(Second or Third Term)	Credits
AT 210	Brake Tech I	4
AT 211	Brake Tech II	4
AT 212	Brake Tech III	4

Suspension/Steering Technician

Course #	(Second or Third Term)	Credits
AT 220	Suspension/Steering Tech I	4
AT 221	Suspension/Steering Tech II	4
AT 222	Suspension/Steering Tech III	4

Automotive Electrical Technician

Course #	(Fourth Term)	Credits
AT 310	Electrical Tech I	4
AT 311	Electrical Tech II	4
AT 312	Electrical Tech III	4

HVAC Technician

(Fifth or Sixth Term) (Offered in Spring or Summer Term Only)

Course #		Credits
AT 410	HVAC Tech I	4
AT 411	HVAC Tech II	4
AT 412	HVAC Tech III	4

Engine Performance Technician

Course #	(Fifth or Sixth Term)	Credits
AT 420	Engine Performance Tech I	.4
AT 421	Engine Performance Tech II	.4
AT 422	Engine Performance Tech III	.4

Core for Auto Parts Specialist

Course #	(First Term)	Credits
AT 110B	General Maintenance I	.3.5
AT 111A	General Maintenance II	.3.5
AT 113	Parts Specialist I	.4
CS 120	Telephone Skills	.1
RM 118	Retail Marketing Math	.1
RM 120	Retail Skills I	.1

Auto Parts Specialist

Course #	(Second Term)	Credits
AT 114	Parts Specialist II	.4
AT 115	Parts Specialist Internship	.4
CS 105	Problem Solving in Customer Service	.2
RM 220	Retail Skills II	.4

Instructors, program managers, and/or the referring counselor may recommend employability skills and elective classes based on the student's needs, abilities, interest and behaviors. Job Seeking Skills is required for all students anticipating to graduate from MCTI.

Automotive Technology Course Descriptions

AT 110B: General Maintenance Tech I

An introduction to basic automotive concepts and modern motor vehicle systems. Students develop basic shop skills through a variety of classroom and shop exercises. The instructor evaluates the student's potential for success in this field. **Topics covered:** shop safety, tools and equipment, locating/using information resources and data needed in auto repair, automotive fasteners, customer satisfaction, personal conduct, employability skills, teamwork.

AT 111A: General Maintenance Tech II

A course for students with some prior knowledge of basic automotive concepts. Classroom and shop exercises allow the instructor to evaluate the student's potential success for progression in the program. **Topics covered:** safety, shop math, periodic vehicle maintenance, brake inspections/assemblies, tire/wheel assemblies, customer service/satisfaction, employability skills, teamwork.

AT 112A: General Maintenance Tech III

Students expand their knowledge of basic automotive concepts and modern motor vehicle systems. Classroom and shop exercises focus on building proficiency in brake and wheel/tire assemblies. The instructor evaluates the student's potential success for progression in the program. **Topics covered:** safety, tools, basic electrical terms/principles, batteries and the charging system, starting system basics, customer service, employability skills.

AT 113: Part Specialist I

Students with experience in general automotive maintenance learn new skills needed to become an automotive parts counterperson. Emphasis on identifying/locating automotive parts while working in an automotive shop environment. **Topics covered:** shop tools, fasteners, equipment, automobile parts information resources, parts terminology, automotive components/systems (e.g., brakes, suspension/ steering, electrical, engine mechanical and cooling systems), customer service, teamwork.

AT 114: Parts Specialist II

Students with experience in general automotive maintenance and a basic knowledge of auto parts continue to build proficiency in both areas. Continued focus is on recognizing, identifying, and locating automotive parts while working in an automotive shop environment. The course prepares students for the ASE Parts Specialist (P2) test. **Topics covered:** automotive components/systems (e.g., engine fuel, exhaust, ignition, and emission systems), manual and automatic transmissions, HVAC systems, customer service, teamwork.

AT 115: Parts Specialist Internship

Students with experience in general automotive maintenance, customer service, cashiering, and a solid knowledge of auto parts gain first-hand experience by working directly with a parts retailer. The internship is individualized based on the student's ability and interest. **Topics covered:** based on retailer's needs and capabilities.

AT 210: Brake Tech I

A course for students who already have the skills/experience to complete general automotive maintenance. Students complete various exercises to begin diagnosing and repairing car and light duty truck braking systems. Prepares students for the state of Michigan or ASE certification test. **Topics covered:** brake fundamentals, design, inspection, measurement, service diagnosis, and repair.

AT 211: Brake Tech II

This course is for students who can complete general motor vehicle maintenance and have a basic knowledge of brakes/braking systems repair. Expand skills in diagnosing/repairing car and light duty truck braking systems and begin to work more independently. Prepares students for the state of Michigan or ASE certification test. **Topics covered:** brake fundamentals (e.g., design, inspection, measurement, service, diagnosis, repair), electrical relationship with brake systems, computer functions.

AT 212: Brake Tech III

This course is for students who can complete general motor vehicle maintenance and are skilled in the service/ repair of brakes and braking systems. Build new skills related to diagnosing/servicing brake systems. Prepares students for the state of Michigan or ASE certification test. **Topics covered:** disc and drum brake overhaul, brake malfunctions, brake hydraulic systems, ABS system components, ABS service information, diagnosis.

AT 220: Suspension/Steering Tech I

This course is for students who can complete general motor vehicle maintenance. Students complete classroom and shop exercises to expand their skills in diagnosing/ repairing car and light duty truck steering and suspension systems. Prepares students for the state of Michigan or ASE certification test. **Topics covered:** tire and wheel construction, service and repair; basic suspension system design, diagnosis, service, and repair.

Automotive Technology Course Descriptions

AT 221: Suspension/Steering Tech II

This course is for students who can complete general motor vehicle maintenance and have a basic knowledge of servicing and repairing suspension/steering systems. Students complete classroom and shop exercises to build skills in diagnosing and repairing car and light duty truck steering and suspension systems. Prepares students for the state of Michigan or ASE certification test. **Topics covered:** tire and wheel construction, alignment principles, techniques, diagnosis; basic suspension system (diagnosis, service, and repair).

AT 222: Suspension/Steering Tech III

This course is for students with solid knowledge/skills in service and repair of suspension/steering systems. Students complete classroom and shop exercises to build skills in service/repair of steering components and systems. Prepares students for the state of Michigan or ASE certification test. **Topics covered:** tires and wheels (service and repair), basic suspension system design, diagnosis, service/repair of suspension systems; alignment principles, techniques, and diagnosis; steering system construction, operation, diagnosis, service, and repair.

AT 310: Electrical Tech I

This course is for students with solid knowledge/experience in general motor vehicle maintenance, brakes, suspension and steering systems. Students complete classroom and shop exercises to become familiar with diagnosis/repair of various electrical circuits. Prepares students for the state of Michigan or ASE certification test. **Topics covered:** electrical fundamentals, battery service and testing, schematics: organization and location.

AT 311: Electrical Tech II

A course for students with solid knowledge/ experience in general automotive maintenance, brakes, suspension and steering systems, and basic knowledge/skills of electrical components, schematics and batteries. Prepares students for the state of Michigan or ASE certification test. **Topics covered:** electrical fundamentals, battery service and testing, schematics (organization and location), starting and charging systems fundamentals — construction, diagnosis, service, and repair.

AT 312: Electrical Tech III

This course is for students with solid knowledge/skills related to electrical systems. Classroom and lab exercises help students build proficiency in the diagnosis and repair of a variety of electrical circuits. Emphasis is on a vehicle's electrical system. Prepares students for the state of Michigan or ASE certification test. **Topics covered:** electrical fundamentals, battery service and testing, schematics (organization and location), starting and charging systems fundamentals — construction, diagnosis, service and repair; accessory and power systems (e.g. wipers, lights, power windows, etc.).

AT 410: HVAC Tech I

This course is for advanced Automotive Technology students. Students complete classroom and lab exercises to become familiar with the construction, diagnosis and repair of heating, ventilation and air conditioning systems (HVAC). Prepares students for the state of Michigan or ASE certification test. **Topics covered:** electricity fundamentals, cooling system basics—diagnosis, service and repair.

AT 411: HVAC Tech II

Advanced Automotive Technology students further develop skills in construction, diagnosis, and repair of heating, ventilation and air conditioning systems. Prepares students for the state of Michigan or ASE certification test. **Topics covered:** electricity fundamentals, cooling systems basics — diagnosis, service and repair; air conditioning fundamentals, elementary refrigeration principles, HVAC controls and operation.

AT 412: HVAC Tech III

This course is for advanced Automotive Technology students with solid knowledge of heating, ventilation and air conditioning systems (HVAC). Students build diagnostic skills needed to service HVAC systems and components. Prepares students for the state of Michigan or ASE certification test. **Topics covered:** electricity fundamentals, cooling system basics — diagnosis, service and repair; air conditioning fundamentals; elementary refrigeration principles; HVAC controls, operation, diagnosis, service, and repair.

AT 420: Engine Performance Tech I

This course is for advanced Automotive Technology students. Construction, diagnosis and repair of powertrain management systems. Prepares students for the state of Michigan or ASE certification test. **Topics covered:** engine fundamentals and design; basic electricity; ignition fundamentals—testing/repair; fuels and fuel system construction.

AT 421: Engine Performance Tech II

Course is for advanced Automotive Technology students who understand engine and ignition fundamentals, fuels, and fuel system construction. Students develop skills in the construction, diagnosis, and repair of powertrain management systems and build proficiency in skills learned in prior courses. Prepares students for the state of Michigan or ASE certification test. **Topics covered:** engine fundamentals and design, basic electricity, ignition fundamentals—testing/repair; fuels and fuel system construction; gasoline fuel injection system, design and service; OBD I and II system components: service and testing.

Automotive Technology Course Descriptions

AT 422: Engine Performance Tech III

Course is for advanced Automotive Technology students with a solid background — knowledge and skills — related to engine performance. Students build proficiency in construction, diagnosis and repair of powertrain management systems. Emphasis on knowledge and skills needed to pass the state of Michigan mechanics certification test (Engine Tune-up/Performance category). **Topics covered:** engine fundamentals and design; basic electricity; ignition fundamentals—testing, repair, fuels and fuel system construction; gasoline fuel injection system design and service; OBD I and II system components: service and testing; emission controls — testing and service; performance and drivability issues.

CS 105: Problem Solving in Customer Service

Fundamentals of how to approach customers to prevent and resolve basic problems in customer service. **Topics covered:** meeting customer needs, empathy, positive interaction skills, communication problems, role of employees and customers in problem resolution, interaction with customers after a problem has developed, and dealing with difficult customers.

CS 120: Telephone Skills

Fundamental skills in telephone courtesy and etiquette. **Topics covered:** proper telephone operations and procedures, greetings, clarifying information, questioning techniques, call holds, transfers, and message-taking procedures.

RM 118: Retail Marketing Math

Auto parts specialists who have basic math skills learn how to apply math skills to solve retail, marketing and business problems. Students learn to efficiently determine prices and taxes, and earnings in a retail/marketing environment. Highly participatory class. **Topics covered:** percents to decimals, decimals to percents, sales tax, total sales, making change, calculating discounts, commission earnings, and sales forms.

RM 120: Retail Skills I

Students learn the basics of working in a retail environment, and develop cashiering and customer service skills. In this hands-on course, students run a cash register with point of sale software and use customer service skills during working hours. **Topics covered:** preparing the cash drawer, handling change, sales transactions, and balancing the cash drawer.

RM 220: Retail Skills II

Students learn advanced cashiering and customer service skills; inventory management and company profitability; protecting company assets, buildings, property, and equipment. **Topics covered:** cashiering, customer service, inventory monitoring procedures, shrinkage, suspicious customers, and safety procedures.

Cabinetmaking/Millwork

Curriculum Guide

Program Description

MCTI's Cabinetmaking/Millwork Program is one of the best-equipped shops in the country for cabinetmaking and millwork training. Students are trained in the operation of state-of-the-art CNC panel processing equipment, spindle moulders, profile grinders, and numerous other woodworking machines. Students work on individual as well as production projects.

Program Admission Requirements:

- None

U.S. Department of Labor Occupational Profile:

Students who most closely match the occupational profile for a cabinetmaker are selected for enrollment. See Appendix for definitions.

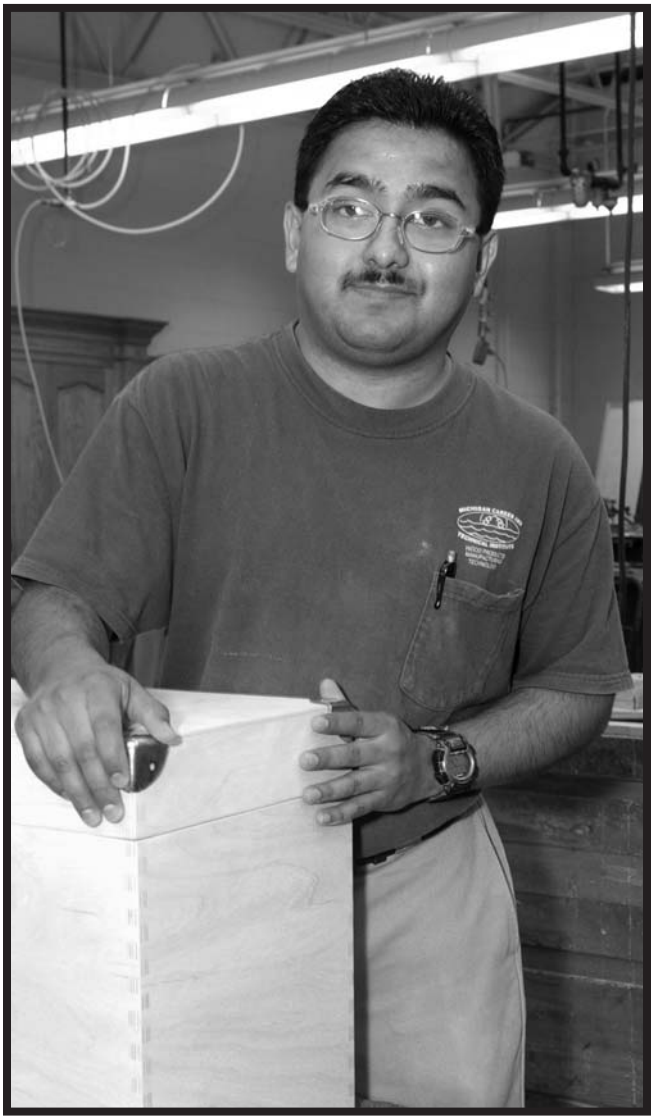
- **Aptitude/Abilities:** Average learning ability, demonstrated ability to compute dimensions, average finger and manual dexterity, average form perception, strong mechanical aptitude.
- **Educational Level:** 4
- **Environment:** Loud, dusty, hazardous materials
- **Physical Demands:** Medium to heavy
- **Temperament:** Performs a variety of tasks, ability to make judgments and execute precision work.

Certificate of Completion Programs:

- Certified Woodworking Machine Operator
- Certified Woodworking Machinist
- Certified Woodworking Moulder Specialist
- Certified CNC Woodworking Specialist
- Certified Cabinetmaker/Bench Carpenter

The Cabinetmaking Department issues five (5) certificates. Students first complete the Certified Woodworking Machine Operator courses (two terms) and then complete the Certified Woodworking Machinist courses (one term).

After completing those core certifications, students may be invited to continue in the program to become certified as a CNC woodworking specialist (one additional term), woodworking moulder specialist (one additional term) and/or cabinetmaker/bench carpenter (two additional terms).



Only students who demonstrate academic progress by maintaining a grade point average of 2.0 or better and good employability skills advance from term to term and certification level.

Cabinetmaking/Millwork
Required Courses for Certification

Students must demonstrate academic progress (satisfactory grade point average) and good employability skills to advance from term to term.

Certified Woodworking Machine Operator

Course #	(First Term)	Credits
CM 100	Introduction to Industrial Woodworking	4
CM 108A	Introduction to Industrial Woodworking Lab	6
CM 125	Blueprint Reading for Architectural Woodworking	1
CM 126	Trade Math for Architectural Woodworkers	1

Course #	(Second Term)	Credits
CM 232A	Advanced Power Tool Use and Operation	1
CM 234	Advanced Woodworking Machine Operation	2
CM 235	Commercial Cabinet Construction	3
CM 208A	Woodworking Machine Operator Lab	6
EC 239	Plane Geometry/Trigonometry Lab	2.5

Certified Woodworking Machinist

Course #	(Third Term)	Credits
CM 340	Introduction to CAD/CAM Programming	2
CM 350	Introduction to Spindle Moulder Operations and Principles	1
CM 360	Introduction to CNC Router Operation and Principles	2
CM 308	Woodworking Machinist Lab	7

Certified Woodworking Moulder Specialist

Course #	(One Additional Term)	Credits
CM 450A	Advanced Spindle Moulder Set-up and Principles	2
CM 451A	Tooling and Grinding Principles for Spindle Moulders	2
CM 458A	Moulder Operator Lab	8

Certified CNC Woodworking Specialist

Course #	(One Additional Term)	Credits
CM 440A	Advanced CAD/CAM Programming	2
CM 460A	Advanced CNC Router Operation and Principles	2
CM 468A	CNC Operator Lab	8

Certified Cabinetmaker/Bench Carpenter

Course #	(Two Additional Terms)	Credits
CM 471	Machine Joinery Principles and Methods	2
CM 472	Advanced Veneering Principles and Methods	2
CM 478	Cabinetmaking/Bench Carpenter Lab I	8
CM 570	Face Frame Cabinet Construction and Methods	4
CM 578	Cabinetmaker/Bench Carpenter Lab II	8

Electives

Course #	(Instructor Approval)	Credits
CM 200	Woodlinks® Certification	1
CM 201	Introduction to Production Wood Finishing	1
CM 325	Advanced Blueprint Reading	1
CM 370	Introduction to Materials & Processes Used in Aviation Cabinetry	2
CM 441	Manufacturing Software Applications	2
CM 442	Solid® Fundamentals	2
CM 443	Advanced Principles of Solid®	2
CM 444	CNC Machining with Solid®	2
CM 540A	Residential Cabinet Layout & Design	2

Instructors, program managers, and/or the referring counselor may recommend employability skills and elective classes based on the student's needs, abilities, interest and behaviors. Job Seeking Skills is required for all students anticipating to graduate from MCTI.

Cabinetmaking/Millwork Course Descriptions

CM 100: Introduction to Industrial Woodworking

This course is for students with little or no experience who are interested in employment in industrial woodworking. Students develop a working knowledge of various materials, tools and processes applicable to the wood industry; and learn to identify and select materials and use tools and processes appropriate for general woodworking applications. **Topics covered:** safe work practices, wood identification, composite panels, plastic laminate, adhesives, fasteners, hand and portable power tools, core stationary woodworking machinery.

CM 108A: Introduction to Industrial Woodworking Lab

This self-paced, highly participatory lab focuses on developing tactile skills required for machine operation and tool usage. Students receive hands-on instruction and demonstrations, then work on assigned projects to develop skills necessary for success in a team-oriented environment. Emphasis on workplace skills (e.g., working safely, time management, organization and productivity). **Topics covered:** tactile skills required for machine operation, tool usage and application of theory in the production of wood products. Industry accepted practices regarding time and attendance, preparedness, teamwork, communication, personal appearance, hygiene.

CM 125: Blueprint Reading for Architectural Woodworking

This course is for students with little or no experience who are interested in employment in industrial woodworking. Students develop a working knowledge of standard blueprints to produce material and cut lists. **Topics covered:** architectural scale, orthographic and isometric views, floor plans, elevations, section views, cabinet construction, cut lists.

CM 126: Trade Math for Architectural Woodworkers

Students become acquainted with math theories and apply them to woodshop applications. Basic math skills are required. **Topics covered:** millimeters, basic geometry, addition, subtraction, multiplication, division of fractions and decimals.

CM 200: WoodLINKS® Certification

Students interested in becoming WoodLINKS®-certified learn how to prepare for the national written exam. **Topics covered:** general wood industry knowledge, history, wood science, test-taking skills.

CM 201: Introduction to Production Wood Finishing

This highly-interactive course is for students with basic woodworking knowledge/experience who are interested in production wood finishing training or those who are not able to meet the academic requirements or physical requirements of other cabinetmaking/millwork jobs. **Topics covered:** liquid chemical measurement/dispensing, stain formulation, finish compatibility, gravity, siphon, and pressure feed air-mix spray systems, finish defects.

CM 208A: Woodworking Machine Operator Lab

In this self-paced, highly interactive lab, students with intermediate skills/experience in cabinetmaking expand competencies in cabinetmaking and workplace readiness skills. Students work on various projects and receive hands-on instruction and demonstrations relevant to tasks at hand. **Topics covered:** tactile skills required for machine operation, tool usage and application of theory in the production of commercial cabinetwork, employability skills.

CM 232A: Advanced Portable Power Tool Use/Operation

In this instructor-led lab, students with intermediate experience in cabinetmaking advance their skills related to various portable power tools common to the wood industry. Students learn to identify and select tools appropriate for general woodworking tasks, safely use these tools to perform various wood cutting/machining operations, and perform basic maintenance, set-up, and tool changes. **Topics covered:** portable power tools (including, but not limited to, routers, sanders, drill motors, circular saws, and plate joiners).

CM 234: Advanced Woodworking Machine Operation

Students with intermediate experience in cabinetmaking/millwork advance their knowledge of stationary woodworking machinery common to the wood industry. Students learn to use equipment safely to perform various lumber cutting/machining operations with little or no supervision. **Topics covered:** table saw, jointer, planer, edge sander, belt/disc sander, spindle sander, wide belt sander, drill press, band saw, miter saw, cut-off saw (up-cutting), radial arm saw, straight-line rip saw, spindle shaper, veneer saw, bench grinder, sliding table panel saw, CNC panel saw.

Cabinetmaking/Millwork Course Descriptions

CM 235: Commercial Cabinet Construction

In this instructor-led lab, students with intermediate experience in cabinetmaking advance their knowledge/skill related to panel processing equipment, commercial cabinet construction, and countertop and work surface construction. Students learn to identify panel processing equipment and safely use the equipment to perform various panel cutting/machining operations with little or no supervision. Students produce standard commercial cabinetry and work surfaces of acceptable quality, at or near an industrial pace. **Topics covered:** hot press, 32mm system technology, work surfaces including self, t-mold, and wood edge; advanced p-lam cabinet construction.

CM 308: Woodworking Machinist Lab

In this self-paced, highly independent lab, students build proficiency as woodworking machinists by working on advanced projects. Hands-on instruction and demonstrations relevant to assigned tasks are featured. Emphasis on safety, time management, organization, productivity. **Topics covered:** advanced tactile skills, tool usage, assembly, and application of theory in the production of wood products, employability skills.

CM 325: Advanced Blueprint Reading

This course is for certified woodworking machine operators. Advanced instruction in reading blueprints and complex drawings. **Topics covered:** multiple page blueprints, complex section and detail views.

M 340: Introduction to CAD/CAM Programming

This introductory course in CAD/CAM technology is taught primarily in a computer lab setting and is for woodworking machine operators with little or no previous knowledge related to CNC/CAD technology. **Topics covered:** Cartesian coordinates system, x-y-z axis, basic AlphaCAM® programming, CNC tooling, g-code editing, tool pathing.

CM 350: Introduction to Spindle Moulder Operations and Principles

This course is for certified woodworking machine operators. Students develop a working knowledge of spindle moulders and shapers performing various machining operations, with supervision. **Topics covered:** safety, basic set-up procedure, using a precision straightedge, lumber selection, and feed procedures.

CM 360: Introduction to CNC Router Operation and Principles

This introductory CNC technology course is for certified woodworking machine operators with little/no previous knowledge of CNC/CAD/CAM technology. Emphasis is on CNC router operation. Students learn to identify CNC routers and point-to-point machines and safely operate these machines with little supervision. **Topics covered:** tool holders, collets, router bits, zeroing tools, machine operation, vacuum pod set-up, spoil boards, fixtures.

CM 370: Introduction to Materials and Processes Used in Aviation Cabinetry

This course is for students with advanced cabinetmaking experience who want to explore employment in the aviation industry. Students develop a working knowledge of specialized materials, fasteners, adhesives, and methods used in the fabrication of aircraft cabinetry. **Topics covered:** composite panels, adhesives, fasteners, and documentation.

CM 440A: Advanced CAD/CAM Programming

This course is for students who have met the requirements of "certified woodworking machinist" status and are interested in specializing in CNC machine operation. An advanced course in CAD/CAM technology taught primarily in a computer lab setting. Students work primarily independently on assigned projects, developing competency and proficiency in programming CNC routers using AlphaCAM®. **Topics covered:** advanced AlphaCAM® programming, G-code editing.

CM 441: Manufacturing Software Application

This course is for students who have met the requirements of "certified woodworking machinist" status, who want to attain cabinetmaker/bench carpenter certification. This advanced course focuses on developing competency and proficiency in using the data produced by cabinet manufacturing software, mainly Cabinet Vision®, and Cabnetware®, to produce cabinet and case work. **Topics covered:** cutlists, assembly sheets, part labeling, panel optimization, and reports.

CM 442: Solid® Fundamentals

This course is for students who have a basic understanding of Windows XP and cabinetmaking. An introductory course in CAD/CAM technology taught primarily in a computer lab setting. Students work independently on assigned projects, developing competency and proficiency in using Cabinet Vision® manufacturing software to produce cut-lists, presentation drawings, cabinet catalogs, and bids. **Topics covered:** program set-up, parameters, material lists, construction methods, layout, drawings, reporting, cabinet editing, and bids.

Cabinetmaking/Millwork Course Descriptions

CM 443: Advanced Principles of Solid®

This course is for students who have successfully completed Solid® fundamentals. An advanced course in CAD/CAM technology taught primarily in a computer lab setting. Students work independently on assigned projects, developing competency and proficiency in the advanced use of Cabinet Vision® manufacturing software to produce 'smart-parts' and subassemblies. **Topics covered:** advanced cabinet and part editing, object intelligence, user-created standards, part libraries, and subassemblies.

CM 444: CNC Machining with Solid®

This course is for students who have successfully completed advanced principles of Solid®. An advanced course in CAD/CAM technology taught primarily in a computer lab setting and operation of CNC machines on the shop floor. Students work independently on assigned projects developing competency and proficiency in CNC machining using Cabinet Vision® manufacturing software to produce optimized output to NC saws, CNC routers, point-to-point machining centers, and part labels. **Topics covered:** intelli-joints, MDF doors, labeling, CNC machine and tool setup.

CM 450A: Advanced Spindle Moulder Set-up and Principles

This instructor-led lab is for students who have met the requirements of "certified woodworking machinist" status and are interested in specializing in spindle moulder operation. Students learn to set up and operate spindle moulders and shapers to produce various mouldings to specification, with little or no supervision. **Topics covered:** safety, advanced set-up procedures, machine calibration, axial constant set-up, troubleshooting, machining defects, maintenance.

CM 451A: Tooling and Grinding Principles for Spindle Moulders

This course is for students who have met requirements of "certified woodworking machinist" status and are interested in specializing in spindle moulder operation. Focus is on advanced knowledge of spindle moulder and shaper tooling. Students set up and operate a profile grinder to produce various spindle moulder and shaper knives. **Topics covered:** grinding room safety, tool steel selection, various carbide knife systems; vitrified, CBN, CBX, and diamond grinding wheels and their appropriate application; template layout and design; axial constant grinding; knife balancing, grinding angles and clearances; insert tooling, straight bore and hydro-lock cutterheads; and dual angle cutterheads.

CM 458A Moulder Operator Lab

Self-paced, highly independent class to develop skills as a moulder operator. Students work on projects and receive hands-on instruction and demonstrations. Emphasis on developing workplace skills (e.g., safety, time management, organization and productivity) while completing advanced projects. **Topics covered:** advanced tactile skills required for machine operation, set-up, tool grinding, and application of theory used in the operation of spindle moulders and shapers, employability skills.

CM 460A: Advanced CNC Router Operations and Principles

This course is for students who have met the requirements to reach "certified woodworking machinist" status and want to specialize in CNC machine operation. Instructor-led lab. Written work, Internet assignments, hands-on demonstrations, and projects. Students will learn skills proficiency to gain employment as an entry-level operator. **Topics covered:** spoil boards, fixture boards, vacuum pods, tooling, maintenance, troubleshooting machining defects, nesting.

CM 468A: CNC Operator Lab

Students develop skills related to CNC operations; work on various projects, receive hands-on instruction and demonstrations relevant to assigned tasks. Emphasis on developing workplace skills (e.g., safety, time management, organization and productivity) while completing advanced projects. Self-paced, highly independent class. **Topics covered:** advanced tactile skills required for machine operation, tool usage, fixturing, application of theory used, CNC router operation.

CM 471: Machine Joinery Principles and Methods

This course is for students who have met the requirements to reach "certified woodworking machinist" status and want to achieve cabinetmaker/bench carpenter certification. An advanced course in machine operation specifically relating to joinery. Students learn skills to produce complex joinery and use joinery in practical project applications. **Topics covered:** machine dovetails, box/finger joints, tongue and rabbet joints, various lap joints, pocket hole joinery, plate joinery, mortise and tenon joinery.

Cabinetmaking/Millwork Course Descriptions

CM 472: Advanced Veneering Principles and Methods

This course is for students who have met the requirements to reach "certified woodworking machinist" status, who want to achieve cabinetmaker/bench carpenter certification. Students apply learned skills to produce quality, veneered surfaces for use in furniture and related projects. **Topics covered:** splicing, matching, sketch faces, vacuum bags, adhesives, curve work.

CM 478: Cabinetmaker/Bench Carpenter Lab I

A self-paced, highly independent lab. Developing competency as a cabinetmaker/bench carpenter. Students work on assigned projects and receive hands-on instruction and demonstrations. Emphasis on developing workplace skills (e.g., safety, time management, organization and productivity) while completing advanced woodworking projects). **Topics covered:** advanced tactile skills required for machine operation, tool usage, assembly and application of theory in producing wood products.

CM 540A: Residential Cabinet Layout and Design

This course is for students who have met the requirements to reach "certified woodworking machinist" status and want to achieve cabinetmaker/bench carpenter certification. An advanced course in CAD/CAM technology taught primarily in a computer lab setting. Students primarily work independently on assigned projects; develop skills using cabinet manufacturing software mainly Cabinet Vision® and Cabnetware® to design residential kitchen cabinetry. **Topics covered:** work triangles, appliance layout, and specialty cabinets.

CM 570: Face Frame Cabinet Construction and Methods

This course is for students who have met the requirements to reach "certified woodworking machinist" status and want to achieve cabinetmaker/bench carpenter certification. An advanced course specifically related to residential face frame cabinet construction methods and principles. Students learn skills to produce quality, face-frame cabinetry. **Topics covered:** pocket hole frame joinery using Castle or Kreg machinery, production frame assembly using a frame press, dado carcass construction, pocket hole carcass construction, and data usage.

CM 578: Cabinetmaker/Bench Carpenter Lab II

A self-paced, highly independent lab to develop advanced competency as a cabinetmaker/bench carpenter. Students work on assigned projects and receive hands-on instruction and demonstrations relevant to tasks at hand. Emphasis on developing workplace skills (e.g., working safely, time management, organization and productivity) while completing advanced woodworking projects. **Topics covered:** advanced tactile skills required for machine operation, tool usage, assembly and application of theory in producing wood products.

EC 239: Plane Geometry/Trigonometry Lab

This course is for students who can solve basic math problems but need some advanced math skills to work in the field of cabinetmaking/millwork or machine technology. Basics of geometry and trigonometry are introduced. **Topics covered:** basic geometric figures, angles, triangles, circles, basic trigonometry functions, calculating sides and angles of right triangles, practical machine applications, and calculating sides and angles of oblique triangles.

Certified Nurse Assistant

Curriculum Guide

Program Description

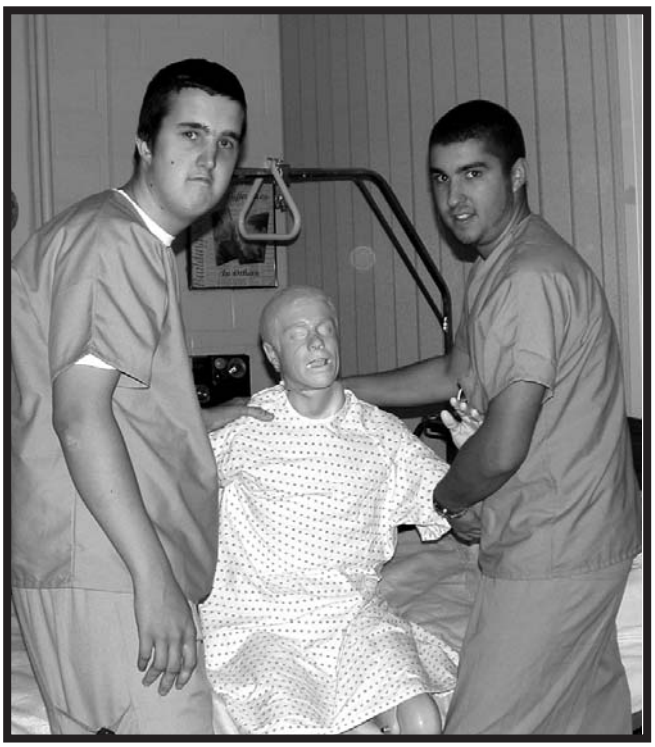
In the Certified Nurse Assistant (CNA) Program, students learn to care for patients in a caring and compassionate manner. Students first learn patient care techniques in a simulated lab environment, followed by a clinical rotation at a nursing home. Upon completion of the program, students are offered study and practice sessions to prepare for the state of Michigan competency exam.

Program Admission Requirements:

- Interview with instructor prior to acceptance
- Must be crime free as outlined by Public Acts 27.28 and 29 (2006)
- No current charges pending

U.S. Department of Labor Occupational Profile: *Students who most closely match the occupational profile for a Certified Nurse Assistant are selected for enrollment. See Appendix for definitions.*

- **Aptitude/Abilities:** Ability to follow orders, work under close supervision, caring and empathetic, good interpersonal communication skills, ability to perform well under stress and demonstrate emotional stability.
- **Educational Level:** 3
- **Environment:** Quiet; exposure to infectious bacteria and viruses
- **Physical Demands:** Medium
- **Temperament:** Performs a variety of tasks, enjoys dealing with people beyond receiving work instructions.



Certificate of Completion Program:

- Certified Nurse Assistant

The Certified Nurse Assistant Program is a one-term program and offers one certificate.

Certified Nurse Assistant
Required Courses for Certification

Certified Nurse Assistant

Course #		Credits
HC 101	Medical Terminology	2
NA 101	Introduction to the Roles of Healthcare Professionals	2
NA 110	Personal Care and Safety Measures	3
NA 120	Patient Care I	3
NA 125	Patient Care II	3
NA 150	Extended Care Facility Clinical	2
	Total Credits	15

Instructors, program managers, and/or the referring counselor may recommend employability skills and elective classes based on the student's needs, abilities, interest and behaviors. Job Seeking Skills is required for all students anticipating to graduate from MCTI.

Certified Nurse Assistant
Course Descriptions

HC 101: Medical Terminology

An introduction to basic medical terminology; no prior knowledge is needed. Students break down medical terms by prefixes, suffixes, and root words to determine the definition of a word. A highly interactive course. **Topics covered:** prefixes, suffixes, root words, abbreviations, medical terminology by body system.

NA 101: Introduction to the Roles of Healthcare Professionals

This highly interactive course is for students who are thinking about or who have decided to pursue a career as a Certified Nurse Assistant (CNA). Information on various healthcare professions and worksites; basic role of the CNA and chain of command in a work environment. **Topics covered:** roles and responsibilities of team members, training/certification requirements, CNA job duties, legal and ethical standards, confidentiality, public relations.

NA 110: Personal Care and Safety Measures

This highly interactive course focuses on providing basic personal care while taking the necessary precautions to protect both the patient and the care provider. **Topics covered:** cardiopulmonary resuscitation (CPR), handwashing techniques, universal safety precautions, care of hair and nails, oral care, shaving the client, proper body mechanics.

NA 120: Patient Care I

This highly interactive course focuses on developing the basic skills used on a daily basis by a care provider when caring for a patient. **Topics covered:** vital signs, intake and output, catheter care, using a gait belt safely for transfers and ambulation of patients.

NA 125: Patient Care II

This highly, interactive course is a continuation of Patient Care I, focusing on developing more advanced skills needed when caring for a patient. **Topics covered:** bathing male and female patients, skin care, dressing, bed making, positioning in bed, feeding patients, range of motion, using physical restraints.

NA 150: Extended Care Facility Clinical

This course is for advanced Certified Nurse Assistant (CNA) students who have demonstrated competence in all skills needed to assist patients in clinical settings. Students apply skills they have acquired in a simulated environment to an actual workplace environment. This two week clinical experience in an area nursing home gives students practice and completes their eligibility criteria for certification. **Topics covered:** reinforcement of all information learned in previous CNA courses, organizational skills and documentation procedures used in an extended care facility.

Culinary Arts

Curriculum Guide

Program Description

The MCTI Culinary Arts Program operates the Pine Cove Restaurant on campus. Students gain experience in the restaurant setting and also work in the school cafeteria where they learn large-quantity food preparation, breakfast cookery, and serving. The program offers the required classes for chef certification, ServSafe, nutrition, and supervision. The program is accredited by the American Culinary Federation's Secondary Accrediting Committee.

Program Admission Requirements:

- Good personal hygiene, appearance, and general good health

U.S. Department of Labor Occupational Profile:

Students who most closely match the occupational profile for a food service worker are selected for enrollment. See Appendix for definitions.

- **Aptitude/Abilities:** Interpersonal communication, work effectively under stress, task planning/organizing, learning ability, carry out detailed written or oral instructions.
- **Educational Level:** 3
- **Environment:** Extreme heat, varying conditions, flexible work schedule
- **Physical Demands:** Medium, standing for long periods
- **Temperament:** Performs a variety of tasks; able to prioritize and make good judgments.

Certificate of Completion Programs:

- Utility Worker
- Food Service Worker
- Cook's Helper
- Line Cook
- Cook
- Cook/Manager

Each Culinary Arts Certificate of Completion Program takes one term. Each culinary arts student is expected to be in the program at a minimum of two terms. Those students who are not able to remain at MCTI for at least two terms may exit after the first term with a Utility Worker certificate.

At the end of each certificate level, the instructor invites those students who demonstrated academic and laboratory (kitchen) progress by maintaining an accumulated grade point average of 2.0 or better and good employability skills to advance to the next term.

The student must have received ServSafe Manager Certification, successfully completed EC 127 Culinary Math, and have an accumulated grade point average of 3.0 or better in all lab-related (kitchen) classes and good employability skills to advance past the third term.

Those students who successfully complete all six terms are eligible to take the National Occupational Competency Testing Institute's (NOCTI) testing for American Culinary Federation (ACF) Secondary Certification.

Culinary Arts
Required Courses for Certification

Students must demonstrate academic progress (satisfactory grade point average) and good employability skills to advance from term to term.

Core Courses
(First Term)

Course #		Credits
CD 100	Culinary Arts Overview	2.7
CD 101A	Culinary Arts I	0.5
CD 102A	ServSafe	1
CD 103A	Baking I	1.3
CD 104A	Culinary Arts Lab I	6.6
EC 114	Math for Food Service Occupations	1.5

(The following course is only available to students who are not demonstrating academic progress during the first term.)

CD 104B	Utility Worker Lab	12

Food Service Worker
(Second Term)

Course #		Credits
CD 205A	Culinary Arts II	0.5
CD 206A	Baking II	0.5
CD 207A	Breakfast Cookery	0.5
CD 208A	Culinary Arts Lab II	10.5

Elective
(For those who want to advance)

Course #		Credits
EC 127	Culinary Math	2

Cook's Helper
(Third Term)

Course #		Credits
CD 309	Culinary Arts III	1
CD 310	Meat Cookery	1.5
CD 311	Dining Room Service	1
CD 312	Culinary Arts Lab III	10

Instructors, program managers, and/or the referring counselor may recommend employability skills and elective classes based on the student's needs, abilities, interest and behaviors. Job Seeking Skills is required for all students anticipating to graduate from MCTI.

Line Cook
(Fourth Term)

Course #		Credits
CD 401	Pine Cove Management	2
CD 402	Nutrition	1.8
CD 403	Culinary Arts Lab IV	10

Cook
(Fifth Term)

Course #		Credits
CD 504	Supervision	0.7
CD 505	Advanced Cooking I	1.3
CD 506	Culinary Arts Lab V	12

Cook/Manager
(Sixth Term)

Course #		Credits
CD 607	Purchasing	0.7
CD 608	Advanced Cooking II	1.3
CD 609	Culinary Arts Lab VI	12

Culinary Arts
Course Descriptions

CD 100: Culinary Arts Overview

This introductory course acquaints students with the hospitality industry, and restaurant operations. **Topics covered:** operation of Pine Cove Restaurant, food service equipment, sanitation, safety.

CD 101A: Culinary Arts I

This course prepares students for entry-level positions in the food service industry. Students learn basic techniques and methods used in food preparation. **Topics covered:** knife usage and safety, weights and measures, cooking principles/terms, mise en place, stocks and sauces.

CD 102A: ServSafe

Students are introduced to the State Health Code standards and how to prevent foodborne illnesses. **Topics covered:** the MicroWorld, Safe Food Handlers, the flow of food, cleaning/sanitizing, integrated pest management, food safety regulations and standards.

CD 103A: Baking I

This course is an overview of basic baking techniques. **Topics covered:** basic baking principles, ingredients, yeast products, breads, pies and fillings, puff pastry, éclair paste.

CD 104A: Culinary Arts Lab I

Students apply academic terms, techniques and skills learned in the classroom to actual performance in the kitchen. **Topics covered:** food service operation.

CD 104B: Utility Worker Lab

An introductory course for students with little or no experience in culinary arts. Hands-on lab focuses on building skills for utility type work. Students learn skills to perform utility work without supervision. **Topics covered:** dining room, serving line, beverage and dish room area.

CD 205A: Culinary Arts II

A continuation of Culinary Arts I. Students learn proper preparation and storage of produce and starches; explore career options in culinary arts. **Topics covered:** basic storage, cleaning and/or preparation of fruits, vegetables, dried beans, rice, grains, and pasta. Field trips.

CD 206A: Baking II

This course is for students who have basic baking skills. In this hands-on lab, students prepare cakes and icing, breads, and cookies. **Topics covered:** quick breads, cakes, icings, decorating, cookies.

CD 207A: Breakfast Cookery

In this course, students learn to prepare breakfast food items. **Topics covered:** eggs, breakfast breads, meats, cereal, coffee, tea.

CD 208A: Culinary Arts Lab II

In this hands-on lab, students with experience in culinary arts learn the skills for general food preparation in a large-quantity operation while following basic sanitation practices. **Topics covered:** preparation/production of breakfast, lunch (sandwiches/dessert items), customer service skills on the serving line.

CD 309: Culinary Arts III

A continuation of Culinary Arts II. Students prepare specific foods and cook with herbs and spices. **Topics covered:** custards, herbs, spices, salads, and salad dressings.

CD 310: Meat Cookery

This course is for students with some experience/knowledge of culinary arts and focuses on the basic composition, structure, quality factors, cuts, cooking, handling, and storage of meat. **Topics covered:** meat cookery — the study of meat, poultry, fish, shellfish.

CD 311: Dining Room Service

This course, for advanced culinary arts students, focuses on how to serve food properly in a restaurant. **Topics covered:** dining room service and terms, space utilization, productivity, service techniques, customer/employee relations.

CD 312: Culinary Arts Lab III

A continuation of Culinary Arts Lab II. This hands-on lab focuses on developing independent and self-motivated work skills for general kitchen work in a food service operation. Students perform basic food preparation while following basic sanitary practices. **Topics covered:** food service operation.

Culinary Arts
Course Descriptions

CD 401: Pine Cove Management

Students in this lab will be in charge of the kitchen when the student restaurant is open for business. **Topics covered:** making schedules, directing production, demonstrating techniques, performing other tasks as needed.

CD 402: Nutrition

A practical, how-to guide on nutrition principles used to evaluate and modify menus and recipes, and respond knowledgeably to customer's questions and needs. Students apply nutrition knowledge to selection, cooking, and planning healthy foods for restaurants and food service operations. **Topics covered:** characteristics, functions, and food sources of major nutrients; maximizing nutrient retention; nutrient needs from menu planning to food preparation.

CD 403: Culinary Arts Lab IV

This hands-on lab is for students who have a working knowledge of the various positions in the Pine Cove Restaurant. Focus is on speed in production and multi-tasking, and preparing the student for a line cook position. **Topics covered:** schedules, self-inspection, increasing/decreasing recipes, sanitation, supervision.

CD 504: Supervision

Students with advanced knowledge and experience in culinary arts focus on theory and application of personnel management techniques. **Topics covered:** leadership styles, human relations management skills (e.g., hiring, orientation, discipline, etc.), motivation techniques, employment laws.

CD 505: Advanced Cooking I

This course, for advanced students, covers more complex procedures building on basic cooking procedures. "Advanced" refers to the complexity of the recipes, theory, procedures, and quality standards expected. **Topics covered:** sauces, soups, first courses, fish, shellfish, poultry, and meats.

CD 506: Culinary Arts Lab V

This hands-on lab is for students with intermediate skills who are preparing for entry-level supervision. Focus is on the daily operation of the Pine Cove Restaurant. **Topics covered:** production, supervision.

CD 607: Purchasing

This course is for students interested in food service management. The student studies quantity purchasing with emphasis on management techniques. **Topics covered:** recordkeeping, portion control, quantitative cookery, costing food items, recipes, menus.

CD 608: Advanced Cooking II

In this course, advanced students learn more complex cooking procedures. Focus is on complexity of the recipe, procedures, quality. Basic knowledge of cooking techniques is required. **Topics covered:** miscellaneous meats, vegetables, special grain preparation, cold foods, molded dishes, foie gras, terrines, rilletes.

CD 609: Culinary Arts Lab VI

This hands-on lab for highly advanced students focuses on applying knowledge gained from CD 504 (Supervision) on a daily basis. Students apply skills required for entry-level management. **Topics covered:** management of Pine Cove Restaurant.

EC 114: Math for Food Service Occupations

Students use basic math skills to solve basic restaurant-related problems. **Topics covered:** sales tax, unit and extension prices, making change, filling out take-out and restaurant checks using customary abbreviations for food items, pricing orders, preparing cash register reports, reconciling amounts on hand, and daily tape totals.

EC 127: Culinary Math

This course for advanced culinary arts students focuses on applying more advanced math skills used in large quantity cooking and to calculate costs. **Topics covered:** converting simple and complex units of measurements used in the culinary field; using yield percentages and edible portion costs to compute recipe costs; converting recipe sizes; using ratio to calculate ingredient quantities.

Custodial

Curriculum Guide

Program Description

The MCTI Custodial Program is designed to train individuals to be capable, well-qualified building and commercial custodians. Through the use of up-to-date equipment, students apply the skills learned at on-campus job stations. Through hands-on training, students gain experience in daily cleaning and floor maintenance, stripping of floors, restroom sanitation, daily carpet cleaning and shampooing, and using and maintaining equipment. Students are also trained to follow work schedules and keep inventory.

Program Admission Requirements:

- None

U.S. Department of Labor Occupational Profile:

Students who most closely match the occupational profile for a custodian are selected for enrollment. See Appendix for definitions.

- **Aptitude/Abilities:** Observation skills, interpersonal communication, job/task planning, follow/remember instructions, work without supervision.
- **Educational Level:** 2
- **Environment:** Exposure to wet/humid weather and hazardous, caustic chemicals
- **Physical Demands:** Heavy
- **Temperament:** Likes repetitive, physical work; enjoys working with hands.

Certificate of Completion Programs:

- Custodial Support Worker
- Custodian

The Custodial Program is a two-term program and students are expected to complete both terms and exit as either a custodial support worker or a custodian.

The Custodial Support Worker certificate is for students who work best under the direction of a crew leader or supervisor. The Custodian certificate is for students who are capable of working independently.

Students must successfully complete the first term with an accumulated grade point average of 2.0 or better and good employability skills to advance to the second term.

Those students who successfully completed the first term with an accumulated grade point average of 2.0 and good employability skills, and are unable to continue to the second term, may receive the Custodial Support Worker certificate.

Custodial
Required Courses for Certification

Students must demonstrate academic progress (satisfactory grade point average) and good employability skills to advance from term to term.

Core Courses/Custodial Support Worker
(First Term)

Course #		Credits
CU 101	Performing General Cleaning Procedures	3
CU 103	Custodial Duties Lab I	4
CU 105	Using Cleaning Chemicals	2
CU 107	Maintaining Floors	2

Custodian or Custodial Support Worker
(Second Term)

Course #		Credits
CU 201	Applying Cleaning Procedures to Specialized Duty	2
CU 203	Custodial Duties Lab II	4
CU 207	Performing Periodic Floor Care	2
CU 208	Cleaning Carpet and Upholstery	2
CU 211	Using Specialized Equipment	2

Required Courses
(First or Second Term)

Course #		Credits
CU 109	Basic Building Maintenance I	1
CU 120	Auto Detailing	1
CU 209	Basic Building Maintenance II	0.5
CU 213	Equipment Maintenance	1

Electives
(Instructor Approval)

Course #		Credits
CU 215	Custodial Support Worker Lab	12
CU 220	Custodial Team Lead	.1
CU 222	Pool and Spa Operator	.1

Instructors, program managers, and/or the referring counselor may recommend employability skills and elective classes based on the student's needs, abilities, interest and behaviors. Job Seeking Skills is required for all students anticipating to graduate from MCTI.

Custodial Course Descriptions

CU 101: Performing General Cleaning Procedures

This course with lab builds skills and knowledge necessary to work safely and cooperatively with fellow students (the crew) under the direction of the instructor (supervisor). Emphasis is placed on completing the job safely, within a certain time frame, and with quality while building general cleaning skills. **Topics covered:** Material Safety Data Sheets (MSDS); taking directions from a supervisor or lead worker, working with peers, cleaning floors, windows, stairs, elevators, drinking fountains, walls; collecting/emptying trash.

CU 103: Custodial Duties Lab I

During this lab students become proficient at performing basic custodial duties. Emphasis is placed on completing the job safely, within a certain time frame, and with quality. **Topics covered:** following supervisor directions and work orders, planning/preparing for the job, working cooperatively with crew members, meeting deadlines, job quality and safety; cleaning restrooms, stairwells, hallways, carpet, classrooms, locker rooms.

CU 105: Using Cleaning Chemicals

This course with lab focuses on building skills and knowledge so that the student can work safely with chemicals. Students learn how chemicals are packaged, labeled, mixed and applied, and how to select the right chemical product for the job. **Topics covered:** correct use of detergents, solvents, and disinfectants; Material Safety Data Sheets (MSDS).

CU 107: Maintaining Floors

This course with lab focuses on correctly and safely maintaining floors and floor pads based on floor and pad type. Emphasis is placed on preparing and planning for the job and selecting the appropriate equipment and cleaning products for the job. The instructor also emphasizes following supervisor directions and work orders. **Topics covered:** Material Safety Data Sheets (MSDS), cleaning methods (broom, dust mop, wet mop, spray buffing), restoration methods and products, scrubbing procedures with/without power equipment, preparation and planning, following a supervisor's directions, work orders, schedules.

CU 109: Basic Building Maintenance I

In this course with lab students perform basic maintenance tasks commonly assigned to custodial staff. Emphasis is placed on safety, problem solving, and mechanical aptitude. **Topics covered:** safety, problem solving, working with tools, caulking, electrical, ceiling tile, drywall repair, regulating door pressure, metal and wood door repair.

CU 120: Auto Detailing

This course with lab focuses on different techniques to clean vehicles both interior and exterior. **Topics covered:** Material Safety Data Sheets (MSDS), degreasing, washing, buffing, polishing, vacuuming; cleaning carpet, windows, vinyl, metal, and scotch guarding.

CU 201: Applying Cleaning Procedures to Specialized Duty

This course with lab focuses on the student's ability to recognize cleaning problems and to act on them. Emphasis is placed on choosing the best solution and then to plan, prepare, and implement these solutions as an individual or as part of a team. Emphasis is placed on safety, self-motivation and attention to detail. **Topics covered:** Material Safety Data Sheets (MSDS); pad/machine/chemical/tool selection; prioritizing work areas, planning, clean-up procedures; labels and safety.

CU 203: Custodial Duties Lab II

During this lab, advanced custodial students become more proficient at performing the tasks of a custodian. Emphasis is placed on completing the job safely, within a certain time frame, and with quality; and on planning and preparing for the job. **Topics covered:** safety, timeliness, quality of work, teamwork, following directions, problem solving; cleaning entryways, gyms, carpets, windows, hallways, kitchens, concrete, brick, resilient floors.

CU 207: Performing Periodic Floor Care

Students build their skills in cleaning floors and working with cleaning chemicals. In this class and lab students work individually or cooperatively within a team while stripping, refinishing, and/or generally maintaining floors. Emphasis on safety, quality of work, working within a time frame, self-motivation, planning/preparation and cleanup. **Topics covered:** Material Safety Data Sheets (MSDS), square footage, floor finish, floor strippers, pH scale, floor pad selection, equipment selection, scrubbing and recoating.

Custodial Course Descriptions

CU 208: Cleaning Carpet and Upholstery

This course with lab covers how to clean carpet and upholstery using the correct cleaning techniques, extraction equipment, and chemical solutions for carpet type. **Topics covered:** Material Safety Data Sheets (MSDS), cosmetic cleaning, carpet shampooing, spot and stain removal, bonnet cleaning, steam cleaning, traffic patterns.

CU 209: Basic Building Maintenance II

In this course with lab, students with basic knowledge of building maintenance advance their knowledge and performance of maintenance tasks. **Topics covered:** safety, problem solving, mechanical aptitude, working with tools, repair and maintenance of common restroom areas.

CU 211: Using Specialized Equipment

This course is designed for students who need to learn how to run and maintain specialized custodial equipment in a variety of settings. Emphasis is placed on selecting appropriate equipment. Students are expected to use proper procedures before and after using equipment and to work safely. **Topics covered:** safety and workplace skills, equipment selection, propane certification, floor machines, pressure washers, automatic scrubbers, propane equipment, burnishers, Kaivac system, wet and dry vacuums.

CU 213: Equipment Maintenance

This course is designed for the student who needs to learn how to maintain custodial equipment used on the job. Emphasis will be placed on following proper safety precautions, following directions in a manual, problem solving, and working with maintenance tools. **Topics covered:** safety precautions, batteries, pad holders, vacuums (bags, belts, and filters), solution and recovery tank clean-up, cord and hose maintenance, lubrication, filtration.

CU 215: Custodial Support Worker Lab

This lab is designed for the student who needs more practice performing general housekeeping tasks and assignments before entering the workforce. During this lab students become proficient at performing the tasks of a custodial support worker. Must follow the directions of the supervisor or the work order, plan and prepare for the job, and work cooperatively with other crew members. **Topics covered:** Housekeeping duties and restrooms, stairwells, hallways, carpet, classrooms, locker rooms; safety, deadlines, quality, following orders, planning and preparing, teamwork.

CU 220: Custodial Team Lead

This course is for students who have shown above average soft skills/teamwork skills, and have demonstrated above average knowledge and ability in performing custodial duties. Focus is on leading/directing fellow students with assigned tasks. **Topics covered:** self-motivation, teamwork, motivating others, planning, preparation, organization, inventory control, conflict management, maintaining daily logs.

CU 222: Pool and Spa Operator

A self-paced, independent study course for students interested in becoming certified in pool and spa operation. The course covers the operation and maintenance of pools and saunas, techniques of chemical treatment filtration and mechanical systems. **Topics covered:** safety, equipment, manuals, daily monitoring schedules, routine chemical checks, pH scale.

Customer Service

Curriculum Guide

Program Description

In the Customer Service Program, students work in a simulated customer service environment utilizing a telephone and a computer to learn all aspects of customer service including: problem solving, telephone techniques and etiquette, computer concepts, and business correspondence. This hands-on training insures the student can work effectively on the computer while communicating clearly, resolving problems, and remaining tactful when handling complaints and satisfying customers.

Advanced students may also qualify to work in one of the MCTI offices or other internship opportunities available.

Students within this department may take any courses listed with instructor approval.

Program Admission Requirements:

- None

U.S. Department of Labor Occupational Profile:

Students who most closely match the occupational profile of a customer service clerk are selected for enrollment. See Appendix for definitions.

- **Aptitude/Abilities:** Demonstrated ability to communicate through oral/written formats; ability to use communication and information technology; ability to problem solve; strong interpersonal relations; basic keyboarding skills, and ability to attain key board speed of 35 wpm; task planning and organization; clerical perception.
- **Educational Level:** 4
- **Environment:** Office
- **Physical Demands:** Sedentary
- **Temperament:** Judgment, variety of tasks, enjoys working with people.

Certificate of Completion Programs:

- Information Clerk
- Customer Service Clerk
- General Office Clerk
- Business Support Specialist (invitation only)

The Customer Service Program is two to three terms and students are expected to earn the Customer Service Clerk certificate or General Office Clerk certificate.

Students take core courses during the first term. Those students who successfully complete the first term, but are unable to continue to the second term, may receive the Information Clerk certificate.

At the end of the first term, the instructor invites those students who successfully demonstrate academic progress by maintaining a grade point average of 2.0 or better and good employability skills to advance to the second term. Depending on the student's skills and interests, the student may work toward the Customer Service Clerk or General Office Clerk certificate.

Advancement beyond the second term is by invitation only.

Customer Service
Required Courses for Certification

Students must demonstrate academic progress (satisfactory grade point average) and good employability skills to advance from term to term.

Information Clerk (Core Courses)

Course #	(First Term)	Credits
CS 100	Customer Service for Business	2
CS 101	Keyboarding	1
CS 102	Communication	2
CS 103	Introduction to Microsoft Office	2
CS 104	Stress Management	1
CS 105	Problem Solving in Customer Service	2
CS 106	Business Forms I	1
HC 101	Medical Terminology	2

Customer Service Clerk

Course #	(Second Term)	Credits
CS 200	Advanced Customer Service	2
CS 201	Intermediate Keyboarding	1
CS 203	Using the Internet and E-Mail	1
CS 204	Creating Business Documents Using Microsoft Word	2
CS 205	Advanced Problem Solving in Customer Service	2
CS 206	Business Forms II	1
CS 207	Business Correspondence	2
CS 208	Job Search Strategies	1

General Office Clerk

Course #	(Second Term)	Credits
CS 201	Intermediate Keyboarding	1
CS 203	Using the Internet and E-Mail	1
CS 206	Business Forms II	1
CS 208	Job Search Strategies	1
CS 220	Intermediate Software Applications	6
CS 221	Intermediate Business Simulation	2

Business Support Specialist

Course #	(Invitation Only—Third Term)	Credits
CS 300	Advanced Computer Applications	6
CS 301	Advanced Business Simulation	6

Electives

Course #	(Instructor Approval)	Credits
CS 120	Telephone Skills	1
CS 680	Independent Study	Varies
CS 690	Work Internship	Varies

Students within this department may take any courses listed with instructor approval.

Instructors, program managers, and/or the referring counselor may recommend employability skills and elective classes based on the student's needs, abilities, interest and behaviors. Job Seeking Skills is required for all students anticipating to graduate from MCTI.

Customer Service Course Descriptions

CS 100: Customer Service for Business

This course is designed for students wishing to gain a fundamental understanding of customer service in business. Students supplement their knowledge through readings of customer service related literature. **Topics covered:** customer service in business/industry, role of a customer service representative, how technology is used, managing multiple tasks.

CS 101: Keyboarding

Students familiar with alphabetic key locations review and/or enhance their keyboarding and ten-key skills. **Topics covered:** touch-typing techniques on the alphabetic keyboard and ten-key numeric keypad, ergonomics, proper posture.

CS 102: Communication

This course focuses on fundamental oral communication skills. Students will demonstrate effectiveness in oral/verbal communication through the use of speeches and presentations. **Topics covered:** basic oral communication; verbal/nonverbal communication, effective feedback, perception, cultural awareness, telephone etiquette/proper procedures including holds, transfers, taking messages.

CS 103: Introduction to Microsoft Office

In this introductory course, students gain a working knowledge of Microsoft Windows and Office, (including Word), Excel, PowerPoint, and Access. **Topics covered:** manipulating the Windows Desktop, managing files/folders using Windows Help; creating, saving, editing Word documents by formatting text and adding clipart graphics. Creating a simple Excel worksheet and chart; producing a PowerPoint presentation with clipart; constructing a database with tables and forms.

CS 104: Stress Management

In this course, students learn and/or improve fundamental skills in stress management and coping styles to increase effectiveness at work. **Topics covered:** personal awareness, stress management tools (time management, organization, goal setting, coping techniques and strategies).

CS 105: Problem Solving in Customer Service

Fundamentals of how to approach customers to prevent and resolve basic problems in customer service. **Topics covered:** meeting customer needs, empathy, positive interaction skills, communication problems, role of employees and customers in problem resolution, interaction with customers after a problem has developed, and dealing with difficult customers.

CS 106: Business Forms I

In this course, students learn and practice preparing forms used daily in businesses. **Topics covered:** completing forms accurately and legibly (invoices, purchase orders, credit memorandums, inventory sheets, shipping memorandums and labels, bills of lading).

CS 120: Telephone Skills

Fundamental skills in telephone courtesy and etiquette. **Topics covered:** proper telephone operations and procedures, greetings, clarifying information, questioning techniques, call holds, transfers, and message-taking procedures.

CS 200: Advanced Customer Service

In this course, students apply basic knowledge/skills, and/or experience in customer service in simulated situations (role plays) to build proficiency when dealing with customers. The course features presentations from customer service representatives and field trips. **Topics covered:** integration of customer service skills.

CS 201: Intermediate Keyboarding

Students who can key 30 wpm with 95 percent accuracy learn to improve their speed and accuracy and learn the ten-key numeric keypad on a computer. **Topics covered:** touch-typing techniques on the alphabetic keyboard and ten-key numeric keypad.

CS 203: Using the Internet and E-Mail

In this course, students learn and apply basic skills when using the Internet, search engines, and e-mail communications to accomplish work objectives. Students create a professional e-mail account. **Topics covered:** how to use the Internet and search engines to find information; Internet policy; e-mail communication basics (e.g., netiquette and other formal/informal guidelines).

CS 204: Creating Business Documents Using Microsoft Word

In this course, students apply Microsoft Word skills to create a variety of business documents. **Topics covered:** formatting letters, memos, reports; setting and changing tabs; creating tables; and merging and printing form letters, envelopes, and labels.

CS 205: Advanced Problem Solving in Customer Service

During this course, students apply basic customer service skills while learning to deal effectively with more difficult and complex customer service problems to ensure customer satisfaction. **Topics covered:** identifying and matching communication styles of customers, and working with business customers.

Customer Service Course Descriptions

CS 206: Business Forms II

A continuation of Business Forms I. Students learn and practice preparing many commonly used business forms. **Topics covered:** accurate and legible completion of forms (deposit slips, receipts, promissory notes, time and wage records, payroll registers, payroll checks, certified mail, and conditional sales contracts).

CS 207: Business Correspondence

During this course, students review proper language, style, and grammar required to compose clear, concise, and appropriate business documents. **Topics covered:** punctuation, capitalization, word usage, sentence structure, and formats of business documents.

CS 208: Job Search Strategies

This course is designed for students who are starting to look for work. Students use skills learned in the Job Search Preparation and/or Job Seeking Skills classes to prepare and search for a job in their field. Students build a personal portfolio that highlights their skills, abilities, and achievements. **Topics covered:** resumes, references, cover letters, thank you letters; cold call and follow-up telephone scripts; interview and presentation skills; answering and asking questions; building a personal portfolio to highlight skills, abilities and achievements.

CS 220: Intermediate Software Applications

This course is for students who already use the fundamental features of Office Suite software. Students build skills using word processing, spreadsheet, database, and presentation software using common intermediate functions typical in business. **Topics covered:** Microsoft Word, Excel, Access, PowerPoint and Publisher programs.

CS 221: Intermediate Business Simulation

In this course, students apply their computer applications and organizational skills to complete a variety of computerized jobs following a simulated business's standards to gain experience and build proficiency. **Topics covered:** formatting and composing letters, memorandums, tables, press releases, and reports; organizing and prioritizing work to meet deadlines; following business standards.

CS 300: Advanced Computer Applications

This course is designed for advanced students demonstrating enhanced aptitude and performance using computer software in the business setting. The course is offered by invitation only based on skills, abilities, and needs of the student. **Topics covered:** advanced features and integration of Microsoft Word, Excel, PowerPoint, Access, and Publisher programs.

CS 301: Advanced Business Simulation

This course is for students with working skills/knowledge of word processing and Office Suite software. Students build advanced skill proficiency in a simulated business environment by using advanced Office Suite skills to complete a variety of business jobs. The course is offered by invitation only based on skills, abilities, and needs of the student. **Topics covered:** designing, formatting, and composing letters, memorandums, envelopes, tables; creating templates, reports, flyers, certificates, and a newsletter; organizing and prioritizing work to meet deadlines; following business standards.

CS 680: Independent Study

Advanced Customer Service students who have completed the regular coursework expand skills by applying them in a work-related project either on-campus or at a local business. Specific course content and projects are individualized based on the student's ability and interest and the business or school need. **Topics or skills used may include:** telephone, computer, and communication skills to accomplish business-based projects.

CS 690: Work Internship

This course is for students interested in working in the field while continuing classroom studies. This is a flexible course designed to insure that the student is employment ready. **Topics covered:** determined by the work internship supervisor.

HC 101: Medical Terminology

This course is for students interested in learning medical terminology; no prior knowledge is needed. This highly interactive course focuses on medical terms and abbreviations. Students break down medical terms by prefixes, suffixes, and root words to determine the definition of a word. **Topics covered:** prefixes, suffixes, root words, abbreviations, medical terminology by body system.

Electronics

Curriculum Guide

Program Description

The MCTI Electronics Program has a well-equipped electronics lab that provides up-to-date, hands on training. Students in the Electronics program learn entry-level skills appropriate to most electronic businesses and industries. Courses help prepare students for entry-level employment in industrial/electronics maintenance. More than 75 percent of the student's time is spent in the lab with hands-on training exercises.

Program Admission Requirements:

- None

U.S. Department of Labor Occupational Profile:

Students who most closely match the occupational profile for an electronics service technician are selected for enrollment. See Appendix for definitions.

- **Aptitude/Abilities:** Above average verbal and numeric aptitudes, manual/finger dexterity, motor coordination, spatial/form perception, learning ability and mechanical reasoning skills, mechanical reasoning skills. Demonstrated ability to interpret technical instructions in mathematical and diagrammatic form and the ability to logically solve problems with abstract and concrete variables.
- **Educational Level:** 4
- **Environment:** Industrial
- **Physical Demands:** Light to Medium
- **Temperament:** Is able to make good judgments; can perform precision work and a variety of tasks.

Certificate of Completion Programs:

- Assembler/Tester
- Communication AV Cable Installer
- Electronics Technician
- Industrial Tester/Installer
- Alarms System Technician
- Industrial Electronics Technician
- Telecommunications/Broadcast Technician

Most new students are accepted into the Electronics Program in fall and spring terms only.

All students in the Electronics Program take core courses in the first two terms. During or after the second term and depending on skills, interests and abilities, students choose a certificate track.

Depending on the certificate track chosen, students may be in the Electronics Program from two to eight terms.

At the end of each term, the instructor invites those students who demonstrate academic progress by maintaining an accumulated grade point average of 2.0 or better and good employability skills to advance to the next term.

Second-term students are given the option to sit for the ETA Certified Alarm System Technician certificate from the Electronics Technicians Association.

Electronics
Required Courses for Certification

Students must demonstrate academic progress (satisfactory grade point average) and good employability skills to advance from term to term.

Core Courses
Assembler/Tester

Course #	(First and Second Term)	Credits
EL 101A	Applied Technical Mathematics I	2
EL 111	Electric Circuits I	4
EL 114A	Electric Circuits I Lab	6
EL 120A	Applied Technical Mathematics II	2
EL 121	Electric Circuits II	4
EL 124	Electric Circuits II Lab	6

Communications
AV Cable Installer

Course #	(Third Term)	Credits
EL 160	Cabling Technology	4
Course #	**Elective (Instructor Approval)**	**Credits**
EL 680	Independent Study Projects	8

Electronics Technician

Course #	(Third/Fourth Term)	Credits
EL 130	Semiconductor Devices	2
EL 131	Semiconductor Devices Lab	4
EL 132A	Electronic Circuits	2
EL 134A	Electronic Circuits Lab	4
EL 143A	Digital Circuits and Introduction to Microprocessors	12

Industrial Tester/Installer

Course #	(Third/Fourth Term)	Credits
EI 411	Mechanical Drive Systems I	4
EI 412	Pneumatics Fundamentals	4
EI 414	Commercial Wiring & Tools	4
EI 415	Power Distribution Systems	4
EI 417	Electrical Motor Control I	4
EI 425	Electrical Control Wiring	4
Course #	**Electives (Instructor Approval)**	**Credits**
EI 413	Rotating Electrical Machines	4
EI 421	Mechanical Drives II	4
EI 422	Electro-Pneumatics	4
EI 427	Electrical Motor Control II	4

Alarm System Technician

Course #	(Third–Fifth Term)	Credits
EA 137	Alarm Systems I	12
EA 147	Alarm Systems II	12
EA 157	Alarm Systems III/Co-op	12
Course #	**Elective (Instructor Approval)**	**Credits**
EL 160	Cabling Technology	4

Industrial Electronic Technician

Course #	(Third–Seventh Term)	Credits
EL 130	Semiconductor Devices	2
EL 131	Semiconductor Devices Lab	4
EL 132A	Electronic Circuits	2
EL 134A	Electronic Circuits Lab	4
EI 411	Mechanical Drive Systems I	4
EI 412	Pneumatics Fundamentals	4
EI 413	Rotating Electrical Machines	4
EI 414	Commercial Wiring & Tools	4
EI 415	Power Distribution Systems	4
EI 417	Electrical Motor Control I	4
EI 422	Electro-Pneumatics	4
EI 425	Electrical Control Wiring	4
EI 427	Electrical Motor Control II	4
EI 429	PLC I Introduction/Trouble-shooting PLCs	4
EI 434	Programming/Installing PLCs I	4
EI 437	AC Drives, Braking and Starting	4
Course #	**Electives (Instructor Approval)**	**Credits**
EI 432A	Hydraulics	4
EI 438	Using and Troubleshooting a PLC System with RSLogix	4
EI 439	PLCs II Application Development and PLC Instructions	4
EI 448A	Troubleshooting Servo Control Systems	3

Telecommunications/Broadcast Technician

Course #	(Third–Seventh Term)	Credits
EL 130	Semiconductor Devices	2
EL 131	Semiconductor Devices Lab	4
EL 132A	Electronic Circuits	2
EL 134A	Electronic Circuits Lab	4
EL 143A	Digital Circuits and Introduction to Microprocessors	12
EL 251	Electronic Communications I Theory	6
EL 254	Electronic Communications I Lab	6
EL 262A	Video Troubleshooting Theory	4
EL 264A	Video Troubleshooting Lab	8
EL 312A	FCC Element 1	3
EL 315	Wireless Communications Theory	3
EL 316A	FCC Element 3 (GROL)	6
Course #	**Electives (Instructor Approval)**	**Credits**
ET 322A	Telecommunications Networks	3
ET 324A	Troubleshooting Telecommunications Equipment	3
ET 326A	Digital Video Theory	3
ET 328	Broadcasting Laboratory Internship	12

Instructors, program managers, and/or the referring counselor may recommend employability skills and elective classes based on the student's needs, abilities, interest and behaviors. Job Seeking Skills is required for all students anticipating to graduate from MCTI.

Electronics
Course Descriptions

EA 137: Alarms Systems I

This course applies DC concepts (Ohm's law, series, and parallel circuits) to the troubleshooting of alarm systems. **Topics covered:** resister color code, Ohm's law, series circuits, parallel circuits, and use of DMM to troubleshoot alarm systems.

EA 147: Alarms Systems II

Students with basic knowledge about alarm systems learn additional skills in alarm installation and servicing. Course prepares students to take and pass the National Alarm Association of America Installer Certification Test. **Topics covered:** installation, adjustment, and troubleshooting of burglar and fire alarm systems; alarm control panels, sensors; CCTV, central stations, emergency-powered backup systems, fire detection devices, PROM programming, relays, audible and visual output indicators, test-taking.

EA 157: Alarms Systems III/Co-op

This hands-on course takes place via an off-campus alarm systems internship, or through on-campus laboratory exercises. Students install, test, and troubleshoot security, fire and medical alert systems; experience is provided in inspection, testing and repair. **Topics covered:** security, fire and medical alert alarm systems in residential and commercial settings.

EI 411: Mechanical Drive Systems I

This introductory course teaches the fundamentals of mechanical transmission systems used in industrial, agricultural, and mobile applications. **Topics covered:** mechanical energy transmission concepts, torque, speed, power and work, mechanical safety, gear ratios, speed ratios, component operation and installation, chain drives, V-belt drives, flexible jaw couplings, solid couplings, pillow-block type bearings, shafts, keyways, spur gears, motor mounting, motor leveling, soft foot, straight edge and feeler gage alignment, multiple shaft alignment, manufacturer's component data, component selection, and basic system design.

EI 412: Pneumatics Fundamentals

This introductory course focuses on the construction, trouble-shooting and maintenance of pneumatic systems. Emphasis is on working safely. **Topics covered:** compressed air characteristics, physical properties, scientific laws, compressed air production, distribution and preparation, control of a single and double acting cylinder, indirect and memory control, automatic return, OR and AND logic functions, flow control, quick exhaust, sequence valve, pressure regulator, pneumatic timer, coordinated motion control.

EI 413: Rotating Electrical Machines

An introductory course in rotating electric machines. The course covers electric machine construction, trouble-shooting, maintenance and safety. Students learn how to operate, install, analyze performance, and select electric machines for various applications. **Topics covered:** DC Series motors, DC shunt motors, DC compound motors, split capacitor, AC single phase motor, capacitor start AC single phase motor, two capacitor AC single phase motor, three-phase AC induction motor, generators, motor speed measurement, motor torque measurement, motor power measurement, motor performance measurement, motor performance analysis.

EI 414: Commercial Wiring and Tools

This course familiarizes the student with commercial electricity, the National Electrical Code (NEC), and wiring principles and practices. It prepares students for electrical and control wiring classes, labs and activities. **Topics covered:** safety and lock out/tag out, tools, electrical print reading, wiring, conductors, boxes and conduit bodies, over current protection, service in distribution, transformers, grounding, branch circuits, and feeders.

EI 415: Power Distribution Systems

In this introductory course students learn industry-relevant skills to enable them to construct, troubleshoot, maintain and repair power distribution systems. Industry standard safety practices are followed throughout the course. **Topics covered:** conduit bending, installation, sizing and selection; IMC, EMT and flexible conduit; bus plug installation, wire sizing, circuit protection, disconnect selection and installation; fitting and selection; system layout, and schematic interpretation.

EI 417: Electrical Motor Control I

This introductory course teaches electric relay control of AC electric motors found in industrial, commercial, and residential applications. Students learn to operate, install, and design AC electric motor control circuits for various applications. **Topics covered:** motor safety, lockout/tagout, troubleshooting methods, interpreting ladder diagrams, system design, component operation, motor control applications, control transformers, manual motor starters, magnetic motor starters, motor overloads, and AC induction motors.

EI 421: Mechanical Drives II

This highly-interactive course is a continuation of Mechanical Drive Systems I. The course focuses on the fundamentals of mechanical transmission systems used in industrial applications. **Topics covered:** heavy duty V-belt drives, V-belt selection and maintenance, synchronous belt drives, lubrication concepts, precision shaft alignment, couplings, and heavy duty chain drives.

EI 422: Electro-Pneumatics

In this course, students with a basic knowledge of pneumatics study design, construction, troubleshooting and maintenance of electro-pneumatic systems. Industry safety standards are emphasized. **Topics covered:** ISO symbology, ladder diagrams, operation and application of standard pneumatic and electrical components, designing basic circuits electro-pneumatic, solenoids, pneumatic valves, electrical sensors, transducers, actuators, timers and counters, memory and pilot control, logic and sequence control.

Electronics
Course Descriptions

EI 425: Electrical Control Wiring

This course is for students with basic knowledge of electrical motor control and hand tools. Students learn to construct, troubleshoot, maintain, and repair wiring in electrical control systems. Industry safety standards are emphasized. **Topics covered:** wire termination, bundling, running, and installation; control panel, wire sizing and splicing, raceway layout, control panel layout, terminal block installation, and conduit sizing.

EI 427: Electrical Motor Control II

This course is a continuation of Electrical Motor Control I (EI-417). Students continue to operate, install, design, and troubleshoot AC electric motor control circuits for various applications. Circuit faults are introduced using either the manual fault insertion or the computer-based fault insertion system. Students learn how to troubleshoot motor control circuits under realistic conditions. **Topics covered:** troubleshooting methods, types of switches (e.g., limit, pressure, liquid level, pushbutton, and selector switches); indicators, overload protection, timer relays, control relays, drum switches, motor sequence control, reversing motor control, motor jogging, safety interlocks, time-delay relay control.

EI 429: PLC I Introduction/ Troubleshooting PLCs

This hands-on course is for students with prior knowledge of electrical motor control and ladder diagrams. The course focuses on constructing, programming, maintaining and troubleshooting of programmable logic controllers (PLCs) and their use in industrial, commercial, and residential applications. **Topics covered:** system design, interfacing to I/O devices, contact and coil instructions, motor control applications, electro-pneumatic applications, BCD/ LED instructions/ applications, program interpretation, PLC system construction, programming, operation, maintenance and troubleshooting.

EI 432A: Hydraulics

In this introductory hydraulics course, students complete 16 exercises (activities/problems) that illustrate hydraulic principles and functions of hydraulic components. Students apply basic hydraulic theory in designing, building, and testing actual circuits. **Topics covered:** hydraulic power units, pressure relief valves, directional control valves, single and double acting cylinders, cylinder positioning, check and pilot check valves, restrictions to fluid flow, speed control circuits.

EI 434: Programming/Installing PLCs I

This course is for students with prior knowledge of PLCs and electrical motor control. Students learn concepts/skills needed to install and maintain a PLC system. **Topics covered:** system layout guidelines, power requirements, safety circuitry, electrical noise in heat problems, I/O installation guidelines and techniques, basic I/O wiring procedures, special interfacing situations, start up procedures, error faults and troubleshooting, preventive control.

EI 437: AC Drives, Braking & Starting

In this course, students study construction, troubleshooting, maintenance, and how to work safely with AC drives, braking and starting motor systems. **Topics covered:** motor plugging, braking, and reduced voltage starting; AC drives, 2-wire control, 3-wire control, manual control, open loop speed control, dynamic braking, programmable acceleration and deceleration, programmed diagnostics, motor jogging, PLC interfacing.

EI 438: Using and Troubleshooting a PLC System with RSLogix

This course is for students with knowledge of industrial electricity and controls and who will be responsible for troubleshooting and maintaining SCL 500 systems using RSLogix 500 software. **Topics covered:** system components, Using RSLogix 500 software to: download, save, backup, monitor and enter data; interpreting bit, timer, counter, comparison, data handling and program control instructions; forces, editing, printing.

EI 439: PLCs II Application Development/PLC Instructions

This course is for students with prior knowledge of programmable logic controllers (PLCs). The student studies the construction, troubleshooting, maintenance and how to work safely with PLC systems. **Topics covered:** system design, interfacing to I/O devices, instructions (e.g., timer/ counter, contact and coil, math, move, subroutine/ zone); applications (e.g., motor control, electro-pneumatic); BCD/ LED instructions/ applications, program interpretation, PLC programming, operation, troubleshooting; event sequencing, application development.

EI 441: Basic Robotics

This course is for students with knowledge of industrial electricity and controls. Students study industrial robotic applications, and sets up and programs a PC-based five-servo robot for several applications. **Topics covered:** robotic limit switches, servo encoders, resolvers, basic hydraulics, programming fundamentals, basic CNC programming; configuring, programming, and teaching a PC-based robot.

EI 448A: Troubleshooting Servo Controls

This course is for students with knowledge of industrial electricity and controls. Students learn about troubleshooting servo systems used in industry. An advanced level elective course that supplements the student's knowledge as an industrial electronics technician. **Topics covered:** basic servo operation, DC servo motor control, semiconductor, theory, feedback devices, AC servo drives.

Electronics
Course Descriptions

EL 101A: Applied Technical Mathematics I

This course is for students with basic knowledge of arithmetic, fundamental computational skills, and basic algebra skills. Students learn to solve mathematical problems in electricity and electronics. **Topics covered:** decimal numbers and arithmetic functions, negative numbers, fractions, powers and roots, powers of 10, scientific notation, metric conversions, ratio and proportion, trigonometry.

EL 111: Electric Circuits I

This course is for beginning students in the Electronics Program. The course prepares students to design and troubleshoot series, parallel, and series-parallel circuits. Students also design a loaded voltage divider and a Wheatstone bridge. Students utilize DC theorems in the design process. **Topics covered:** Ohm's law, series, parallel, and complex circuits; bridge circuits, power, network, and theorems.

EL 114A: Electric Circuits I Lab

This laboratory course is taken concurrently with EL-111A. Students construct circuits, make measurements, and do troubleshooting. **Topics covered:** proper construction, measurement techniques, troubleshooting of series, parallel, series-parallel, voltage divider, and Wheatstone bridge circuits.

EL 120A: Applied Technical Mathematics II

This course is for students with basic knowledge of arithmetic, fundamental computational skills and basic algebra skills. Course follows Tech Math I and provides tools to solve mathematical problems in electronics. **Topics covered:** logarithms, logarithmic graphing literal numbers, multiplying and factoring polynomials, methods of solving equations.

EL 121: Electric Circuits II

This course is for students with prior knowledge of DC electronics. This course prepares students to design, construct, measure, and troubleshoot AC circuits as an electronics technician.**Topics covered:** RMS, peak and peak-to-peak AC measurements, reading AC voltages with a DMM and oscilloscope, effects of resistance and reactance in an AC circuit, phase-shift, practical AC power generation practices, capacitance and inductance in an AC circuit, apparent and true power.

EL 124: Electric Circuits II Lab

This lab is taken concurrently with EL-121. Students design, contruct, measure and troubleshoot AC circuits. **Topics covered:** operation of the sine-square wave generator, operation of the oscilloscope, construction, operation, troubleshooting AC circuits; verification of proper circuit operation using the DMM and oscilloscope.

EL 130: Semiconductor Devices

This is a theory course for students with basic knowledge of DC and AC electronics. The course is taken concurrently with EL 132 and provides the foundation for semiconductor devices that are used in electronics. **Topics covered:** semiconductors, diodes, power supplies, junction transistors, and electronic control devices.

EL 131: Semiconductor Devices Lab

This is a hands-on lab for students with basic knowledge of DC and AC electronics. Students apply the theory learned in EL-130. in lab exercises and projects. Students test and trouble-shoot semiconductor devices used in electronics. **Topics covered:** semiconductors, diodes, power supplies, junction transistors, electronic control devices.

EL 132A: Electronic Circuits

This is a theory course for students with basic knowledge of semiconductors. Students learn the foundation for circuits that are used in electronics. This course is taken concurrently with EL-134A. **Topics covered:** small and large signal amplifiers, operational amplifiers, regulated power supplies and oscillators.

EL 134A: Electronic Circuits Lab

This is a hands-on lab for students with basic knowledge of semiconductors. Students apply the theory learned in EL 132A in lab exercises and projects related to electronic circuits. **Topics covered:** small and large signal amplifiers, operational amplifiers, regulated power supplies, and oscillators.

EL 143A: Digital Circuits and Introduction to Microprocessors

This course is for advanced students with prior knowledge of semiconductor circuits. Students build, program and troubleshoot digital circuits and microprocessor systems related to the telecommunication field. **Topics covered:** digital arithmetic, digital logic (Boolean), synchronous and asynchronous digital circuits, 8086-based microprocessor logic and programming, and PC systems hardware and software integration.

EL 160: Cabling Technology

This course is for students with knowledge of basic electricity and controls. Students learn the fundamental knowledge, understanding, and skills needed to install, troubleshoot, and maintain cable and low voltage wiring systems. The course provides students with the foundation to become qualified cable technicians or enhances their employability as an industrial or telecommunications technician. **Topics covered:** network theory and components, cable installation, termination, and testing.

Electronics
Course Descriptions

EL 251: Electronic Communications I Theory

This course is for students experienced in working with electricity and circuits. Students prepare to build, test, and troubleshoot RF circuitry, and telephone systems. **Topics covered:** wireless propagation, transmitter, superheterdyne receiver, AM, FM SSB and digital transmission modes, transmission lines, antenna systems, and telephony.

EL 254: Electronic Communications I Lab

Students take this lab concurrently with EL-251. Students use a kit to assemble and test an AM/FM superhet receiver and electronic telephone. Students produce Ethernet, coaxial, and telephone cables with connector termination.

EL 262A: Video Troubleshooting Theory

This course is for students with a basic foundation in electronics and is taken concurrently with EL-264A. Students become familiar with video systems and how to troubleshoot electronic devices. Prepares students for employment as an electronic technician or to continue training for telecommunications. **Topics covered:** power supply troubleshooting/ theory, including linear pass regulated, pulse rate and pulse width switching power supplies, basic television and video systems, television theory, scanning circuits, HV power supplies, adjustments for color television, tuners and cable television, computer monitors, startup and shutdown circuits, and MATV systems.

EL 264A: Video Troubleshooting Lab

This course is for students with a basic foundation in electronics and is taken concurrently with EL-262A. Students become familiar with video systems and learn to troubleshoot, repair, order parts, and provide customer service in a simulated service shop setting. The course prepares students for employment as an electronic technician or to continue training for telecommunications. **Topics covered:** lab practices, measurement techniques, equipment usage, troubleshooting techniques required to apply the concepts learned in course EL-262A in a practical career setting.

ET 312A: FCC Element 1

This course is for students specializing in telecommunications who require the FCC GROL license to obtain employment in the wireless communication field. The course focuses on skills needed to pass Element #1 of the GROL, which is the Marine Radio Operator Permit (MROP). **Topics covered:** Maritime radio law and operating practices.

ET 315: Wireless Communications Theory

This course is for advanced level students specializing in telecommunications who require a working knowledge of wireless communication devices and systems. **Topics covered:** two-way communications theory and practice for the aeronautical, marine, land mobile, satellite, trunked, and cellular fields. AM, FM, SSB, and digital transmission modes are covered.

ET 316A: FCC Element 3 (GROL)

This course is for advanced level students specializing in telecommunications who require the FCC GROL license needed to obtain employment in the wireless communication field. Students learn skills needed to pass the FCC GROL license test which is also part of NARTE certification requirements. **Topics covered:** operating procedures, radio wave propagation, radio practices, electrical principles, circuit components, practical circuits, signal and emission, antennas, feed lines.

ET 322A: Telecommunications Networks

This course is for advanced students specializing in telecommunications. Students design, configure and debug hardwired and wireless Microsoft Windows™ based LAN Systems used in the telecommunications field. **Topics covered:** Windows™ based Ethernet LAN systems (peer networked), Wi-Fi Wireless LAN systems PNA, (Telco) RF LANsystems and Home-Plug (Carrier Current) RF LAN systems.

ET 324A: Troubleshooting Telecommunications Equipment

This course is for students specializing in telecommunications. Students build skills needed to install, maintain and repair telecommunications devices/systems. **Topics covered:** R.F. tests and measurements, proper test instruments and procedures, R.F. troubleshooting techniques, proper repair techniques.

ET 326A: Digital Video Theory

This course is for advanced level students specializing in telecommunications who require a working knowledge of digital communications and digital multimedia for broadcasting and telecommunications fields. **Topics covered:** standard HDTV formats (720p, 1080:, 1050p) types of HDTV monitors (plasma, LCD, DLP & LCUS), simulcasting, digital tuners, field-strength requirements, HDTV 16:9 aspect rated, HDTV accessories, 8VSB modulation technique, NTSC versus ATSC. Introduction to video editing using Microsoft Windows.

ET 328: Broadcasting Laboratory Internship

This internship at a commercial TV/radio station prepares the broadcasting/ telecommunication student for employment in the broadcasting industry. Student may also elect to utilize the internship to acquire SBE (Society of Broadcast Engineers) certification. **Topics covered:** TV/radio station operation and maintenance, including — but not limited to — broadcasting transmitter and antenna system maintenance, STL communication, multimedia processing, and master control/camera.

Graphic Communications

Curriculum Guide

Program Description

The MCTI Graphic Communications Program is run like a print shop. In this production environment, students develop job competencies, while operating specialized printing equipment to produce brochures, business cards, forms, and other printing for the school and various other organizations.

Program Admission Requirements:

- None

U.S. Department of Labor Occupational Profile:

Students who most closely match the occupational profile for a printing machine operator are selected for enrollment. See Appendix for definitions.

- **Aptitude/Abilities:** Mechanical, manual dexterity, motor coordination, color and form perception, computer literate, numeric, task planning/organizing, attention to detail
- **Educational Level:** 4
- **Environment:** Loud, hazardous machinery, and fumes
- **Physical Demands:** Medium
- **Temperament:** Performs a variety of tasks; is able to execute precision work

Certificate of Completion Programs:

- Screen Printer
- Bindery/Finishing Worker
- Press Assistant

Graphic Communications students take core courses during the first term. Based on skills, abilities, and interests, those students who demonstrate academic progress by maintaining a grade point average of 2.0 or better and good employability skills are invited to advance to either the Screen Printer certificate track or the Bindery/Finishing Worker track.

Students in the Screen Printer certificate track exit after two terms. Students in the Bindery/Finishing Worker track may exit after two terms or be invited to advance to the next term to earn the Press Assistant certificate.

Graphic Communications
Required Courses for Certification

Students must demonstrate academic progress (satisfactory grade point average) and good employability skills to advance from term to term.

Core Courses

Course #	(First Term)	Credits
EC 134A	Graphic Communications Trade Math	.2
GC 100	Layout and Design	.4
GC 105	Introduction to Graphic Communication	.4
GC 110	Introduction to Screen Printing	.4

Screen Printer

Course #	(Second Term — exit after this term)	Credits
GC 200	Bindery and Finishing Support	.6
GC 210	Screen Printing Lab	.6

Bindery/Finishing Worker

Course #	(Second Term – may advance to Third Term)	Credits
GC 205	Bindery and Finishing Operations	.4
GC 215	Offset Press Operation	.4
GC 220	Flexographic Press Operation	.4

Press Assistant

Course #	(Third Term)	Credits
GC 300	Advanced Offset Press Operations	.4
GC 305	Advanced Flexographic Press Operations	.4
GC 310	Production Printing	.4

Additional Courses

Course #	(Instructor Approval)	Credits
GC 400	Pre-Press	.12
GC 680-12	Independent Study	.12

Instructors, program managers, and/or the referring counselor may recommend employability skills and elective classes based on the student's needs, abilities, interest and behaviors. Job Seeking Skills is required for all students anticipating to graduate from MCTI.

Graphic Communications
Course Descriptions

EC 134A: Graphic Communications Trade Math

This course is a practical math course focused on common problems encountered in the printing field. Initial emphasis is placed on using a measurement tool to accurately measure given lengths. Basic math skills are applied and strengthened using a step-by-step approach. **Topics covered:** measurement of various lengths and the use of whole numbers, common fractions, and decimal fractions in practical use in the field of graphic communications.

GC 100: Layout and Design

Students with little/no experience in graphic communications learn the basic skills required to work in the field. This hands-on course focuses on common terminology, measuring and copy preparation. Emphasis is placed on working safely and neatly. **Topics covered:** page layout, copy preparation, measuring, typography, common terminology, safety, neatness and accuracy, computers, use of common tools and equipment.

GC 105: Introduction to Graphic Communications

In this course, students learn the basics of press and copier operations, explore career options. The course is a mix between self-paced instruction using computers, instructor-led classroom activities, demonstrations and hands-on activities. Students run a press or copier under the supervision of an instructor. **Topics covered:** terminology, screen, flexographic, lithographic, digital, and copier concepts.

GC 110: Introduction to Screen Printing

This hands-on course focuses on producing screen prints on a variety of materials and products. Students work on and complete actual screen printing jobs in a production environment. **Topics covered:** safety, quality, screen preparation, substrates, inks and additives, use and maintenance of screen printers, keeping the shop clean, teamwork.

Graphic Communications Course Descriptions

GC 200: Bindery and Finishing Support

This course is for students with basic knowledge in graphic communications. Students learn to operate finishing equipment. Students who complete the course should be able to work as a machine tender and/or assistant with supervision. **Topics covered:** safety, paper, cutters, figuring best cut, folders, binding, delivery of finished product, quality control.

GC 205: Bindery and Finishing Operations

In the hands-on course, students develop operator skills using a wide range of finishing and bindery equipment typically found in small and midsize graphic communications companies. Ability to work independently as a bindery/finishing worker. Students who complete the course should be able to work independently as a bindery/finishing worker. **Topics covered:** safety, quality control, organization, paper, cutters, figuring best cut, folders, binding, delivery of finished product.

GC 210: Screen Printing Lab

This hands-on course is for students experienced in screen printing. Students work independently (without supervision) to produce screen prints on a variety of materials and products. Work is done on actual jobs in a production environment. **Topics covered:** safety, quality, production speed, screen preparation, substrates, inks and additives, use and maintenance of screen printers, keeping the shop clean, teamwork.

GC 215: Offset Press Operation

This course is for students who know the basics and are ready to prepare for a job as a press operator or assistant. This course is a mix of computer simulation and hands-on activities related to press operation, maintenance and troubleshooting. Students gain confidence in working around presses with indirect supervision. **Topics covered:** safety, press equipment (e.g., cleaning, maintenance, set up, operation, and troubleshooting).

GC 220: Flexographic Press Operation

Students who know the basics, learn flexographic press operation to prepare for a job as a press operator or assistant. The course is a mix of self-paced text instruction, computer simulation, and hands-on activities related to press operation, maintenance, and troubleshooting. Students gain confidence working around presses with indirect supervision. **Topics covered:** safety, flexographic presses, plate making, press operation, maintenance, and troubleshooting; keeping the work environment clean and organized.

GC 300: Advanced Offset Press Operations

This course is for students who have demonstrated competency in offset press operation and who plan to pursue a job as a press operator. The course is a mix of computer simulation and hands-on activities related to press operation, maintenance and troubleshooting. Students gain confidence working around presses with minimum supervision. **Topics covered:** safety, press equipment (e.g., cleaning, maintenance, set up, operation, troubleshooting), production scheduling.

GC 305: Advanced Flexographic Press Operations

This course is for students who have demonstrated competency in flexographic press operations. The course is a mix of self-paced text instruction, computer simulation, and hands-on activities related to press operation, maintenance and troubleshooting. Students gain confidence working around presses with minimum supervision. **Topics covered:** safety, flexographic presses, dies, ink handling, press operation, maintenance and troubleshooting, keeping the work environment clean and organized.

GC 310: Production Printing

This course is for students who have demonstrated competency in press and bindery operations. This course is a mix of hands-on activities that build skill in production and job planning. Students gain confidence in working around MCTI press equipment with minimum supervision. **Topics covered:** safety, troubleshooting, production planning, delivery, quality control, organization skills, keeping the work environment clean.

GC 400: Pre-Press

This course is for students who have demonstrated competency as a press assistant and bindery/finishing worker or who have a strong understanding of the industry. This hands-on course focuses on using the computer to prepare copy for printing. **Topics covered:** computers, file maintenance, Photoshop, illustration programs, layout programs, fonts, image assembly, proofing, plate making, terminology.

GC 680-12: Independent Study

Independent study for advanced students enrolled in the Graphic Communications program who need additional instruction/practice to build skills. Specific course content and work-related projects are individualized based on the student's ability, interest and need. **Topics or skills used may include:** press operation, pre-press operations, bindery and finishing operations.

Grounds Maintenance and Landscaping

Curriculum Guide

Program Description

The MCTI Grounds Maintenance and Landscaping Program is run like a small grounds maintenance and landscaping business. Students are the crew and work as a team. Students gain actual experience on the school campus. They use power equipment and tools to mow and trim the lawn; trim and prune hedges and bushes; and plant trees, shrubs, and flowers. In the winter months, they are exposed to snow and ice removal using plows and a variety of hand tools. The crew maintains the equipment used.

Program Admission Requirements:

- Valid driver's license

U.S. Department of Labor Occupational Profile:

Students who most closely match the occupational profile for a groundskeeper are selected for enrollment. See Appendix for definitions.

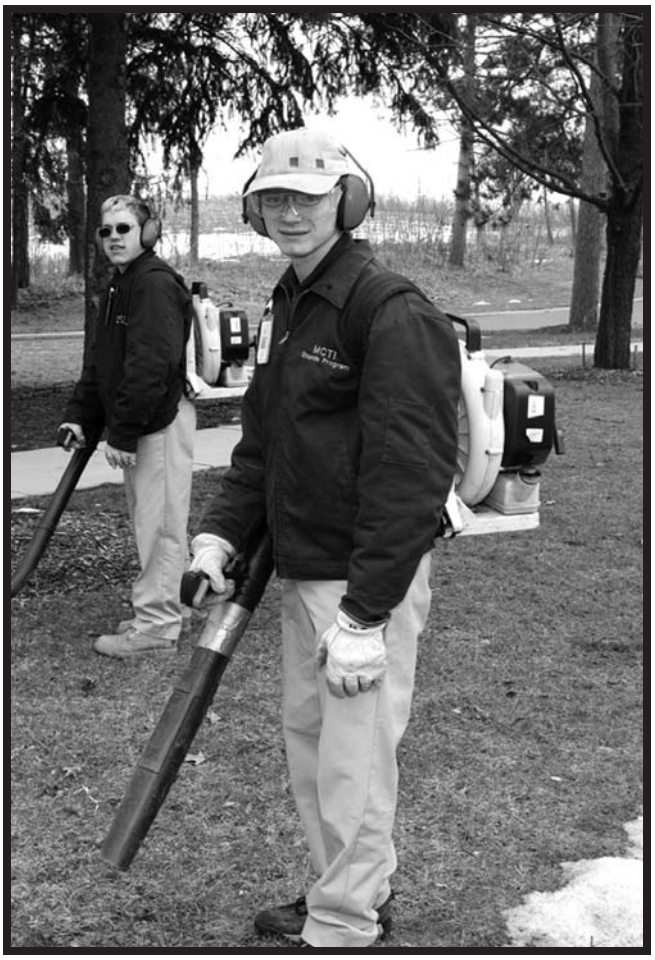
- **Aptitude/Abilities:** Low to fair manual dexterity and motor coordination, demonstrated ability to follow written/oral instructions, make judgments and observations regarding prioritizing tasks and quality of work standards. Effective interpersonal communication skills, and the ability to work with/without supervision.
- **Educational Level:** 2
- **Environment:** Loud, outside
- **Physical Demands:** Heavy
- **Temperament:** Performs a variety of tasks.

Certificate of Completion Programs:

- General Maintenance Worker
- Grounds Maintenance/Landscaping Technician

The Grounds Maintenance and Landscaping Program is two terms and students are expected to earn the Grounds Maintenance/Landscaping Technician certificate.

New students in the Grounds Maintenance and Landscaping Program are accepted in the fall and spring terms only.



Students who successfully complete the first term with an accumulated grade point average of 2.0, have good employability skills, but are unable to continue to the second term may receive the General Grounds Maintenance Worker certificate.

Grounds Maintenance/Landscaping Required Courses for Certification

Students must demonstrate academic progress (satisfactory grade point average) and good employability skills to advance from term to term.

General Grounds Maintenance Worker

Course #	(First Term)	Credits
GM 101	Grounds Maintenance Procedures I	3
GM 102	Maintenance and Operation of Power Equipment I	3
GM 103	Safety, Tool Utilization, and Recordkeeping I	3
GM 104	Introduction to Landscaping	3

Electives

Course #	(Instructor Approval)	Credits
EC 095	Basic Math	0
EC 100	Consumer Math	1

Grounds Maintenance/Landscaping Technician

Course #	(Second Term)	Credits
GM 201	Grounds Maintenance Procedures II	3
GM 202	Maintenance and Operation of Power Equipment II	3
GM 203	Safety, Tool Utilization, and Recordkeeping II	3
GM 204	Introduction to Landscaping II	3

Instructors, program managers, and/or the referring counselor may recommend employability skills and elective classes based on the student's needs, abilities, interest and behaviors. Job Seeking Skills is required for all students anticipating to graduate from MCTI.

Grounds Maintenance/Landscaping Course Descriptions

EC 095: Basic Math

Students learn to master concepts using fractions, decimals, and percents in practical and applied settings. Course is individualized to meet students' specific needs as determined by a math pretest. The course is self-paced to match students' personal grasp and understanding of concepts. **Topics covered:** fractions, decimals, and percents; addition, subtraction, multiplication and division.

EC 100: Consumer Math

Students practice math problems related to everyday living to be better prepared to live independently. **Topics covered:** computing straight time, overtime, gross and net pay; filling out deposit and withdrawal slips for savings and checking accounts; filling out check stubs and keeping a running balance; computing inventory values; preparing a budget.

GM 101: Grounds Maintenance Procedures I

This course is designed for students with little or no knowledge or experience in ground maintenance. Emphasis is placed on working as a professional and developing skill using professional power equipment and grounds maintenance tools. The course includes training on selection of proper equipment and methods for various grounds maintenance tasks. **Topics covered:** basic landscape maintenance hand tools, vehicles, outdoor power equipment; professional work behavior, teamwork, maintaining walks, drives, parking lots, turf, and beds.

GM 102: Maintenance and Operation of Power Equipment I

This course develops basic skills in maintaining, operating, and transporting outdoor power equipment currently used in the grounds maintenance field. **Topics covered:** basic landscape maintenance hand tools and power equipment, grounds maintenance vehicles, adjustment, lubrication, blade sharpening/balancing, cleaning and transporting power equipment, safety and personal protective equipment.

GM 103: Safety, Tool Utilization, and Recordkeeping

This introductory course focuses on basic skills needed to safely operate and efficiently use professional power equipment and other related tools. **Topics covered:** safety procedures, personal protective equipment and attire, operating power equipment, hand tools, MSDS sheets, grounds maintenance vehicles, work logs, time sheets, material lists, teamwork.

GM 104: Introduction to Landscaping

For students with little or no experience in landscaping. Emphasis is placed on maintaining existing designs and developing new designs as well as fundamental landscaping skills. Students are introduced to basic planting and care of plants. Concepts are developed in the art or work of placing or arranging lawns, trees, or bushes on a plot of ground to make it more attractive. **Topics covered:** trees and plants, seed germination, planting technique, site selection, plot preparation, tools and equipment, care techniques, compatible materials and plants, drawing and simple design.

GM 201: Grounds Maintenance Procedures II

Students who know the basics of grounds maintenance expand their skills with focus on proper selection of equipment and tools in order to complete the job efficiently. **Topics covered:** basic landscape maintenance hand tools, grounds maintenance vehicles and outdoor power equipment, efficiency.

GM 202: Maintenance and Operation of Power Equipment II

For students with basic knowledge/skill operating and maintaining power equipment used in grounds maintenance. Students continue to build skills in the safe and efficient use and maintenance of power equipment. **Topics covered:** basic landscape maintenance hand tools, grounds maintenance vehicles and outdoor power equipment, use of tow vehicles and trailers, efficiency, and vehicle maintenance.

GM 203: Safety, Tool Utilization, and Recordkeeping II

For students with basic knowledge/skill in safely using tools and recordkeeping systems in the grounds maintenance field. Emphasis is on accurate and timely record keeping, using tools wisely. **Topics covered:** safety hazard identification, maintenance logs, basic landscape maintenance hand tools, grounds maintenance vehicles and trailers, work logs, material lists, billing, invoices.

GM 204: Introduction to Landscaping II

Students with basic knowledge/skill in landscaping, expand skills in care of plants, arrangement of trees, bushes, shrubs, and their relationship to buildings, walks, parking lots, and athletic facilities. Basic landscape construction and hardscapes are introduced. **Topics covered:** plants and trees, seed germination, planting technique, sight selection and appropriateness, landscape plans, plot preparation, landscapes, floral arrangement, and design, installation and removal of seasonal decorations.

Machine Technology

Curriculum Guide

Program Description

The MCTI Machine Technology Program is run like a small machine shop. Students are taught to run various machines including manual lathes, milling machines, and grinders. Students use hand tools to lay out, finish, fit, and assemble parts. Students also learn setup and operation of CNC turning and machining centers. Advanced students learn to use CAD/CAM software such as AutoCAD, Solidworks, and Bobcad/CAM to generate G-code for CNC machining.

Program Admission Requirements:

- None

U.S. Department of Labor Occupational Profile:

Students who most closely match the occupational profile for a machinist are selected for enrollment. See Appendix for definitions.

- **Aptitude/Abilities:** Average learning ability, spatial and form perception, motor and fine finger dexterity. Demonstrated ability of mechanical reasoning, computer literacy, and the ability to problem solve and compute dimensions.
- **Educational Level:** 3 to 4
- **Environment:** Loud, hazardous machines
- **Physical Demands:** Medium
- **Temperament:** Perform precision work and a variety of tasks

Certificate of Completion Programs:

- Machine Operator
- Welder/Fabricator
- CNC Operator
- CNC Machinist

The Machine Technology Program is two to four terms and students are expected to learn at least a Welding/Fabricator or CNC Operator certificate.

At the end of the first term, the instructor invites those students who demonstrate academic progress by maintaining an accumulated grade point average of 2.0 or better and good employability skills to advance to the next term for either the Welding/Fabricator Track or the CNC Operator Track.

At the end of the second term, those students who successfully complete MT 207 and MT 208 with an accumulated grade point average of 2.0 or better may be considered for the CNC Operator program.

Students who successfully complete the CNC Operator program by maintaining an accumulated grade point average of 3.0 or better and good employability skills will be invited to advance to the CNC Machinist Program.

Those students who have successfully completed the first term with an accumulated grade point average of 2.0 and good employability skills, and are unable to continue to the second term may receive the Machine Operator certificate.

Machine Technology
Required Courses for Certification

Machine Operator

Course #	(First Term)	Credits
MT 107	Machine Tool I	.2
MT 108A	Machine Shop Practices	.6

Required to Advance to Second Term

MT 105	Blueprint Reading	.3

Required for CNC Operator Track

EC 130	Technical Math for Machine Technology and Drafting	.2

Welder/Fabricator

Course #	(Second Term)	Credits
MT 210A	Basic Welding	.6
MT 210B	Fabricating	.6

Core Courses for CNC Certificates

Course #	(Second Term)	Credits
EC 115	Algebra	.2
MT 207	Machine Tool II	.3
MT 208	Machine Shop Practices II	.7
MT 220	Introduction to CNC Programming	.2

CNC Operator

Course #	(Third Term)	Credits
MT 315	CAD/CAM	.3
MT 320A	CNC Operations I	.9
EC 239	Geometry/Trigonometry	.2

CNC Machinist

Course #	(Fourth Term)	Credits
MT 420	CNC Machine Operator II	.4
MT 425	CAM	.8

Instructors, program managers, and/or the referring counselor may recommend employability skills and elective classes based on the student's needs, abilities, interest and behaviors. Job Seeking Skills is required for all students anticipating to graduate from MCTI.

Machine Technology
Course Descriptions

EC 115: Algebra

Students learn basic algebra that is needed for training in any technical/vocational field or testing including GED, college entrance, civil service, and military entrance. **Topics covered:** signed numbers and order of operations, powers, roots, and scientific notation, algebraic expressions and formulas, one-step equations, multi-step equations, special equations, graphing equations, polynomials.

EC 130: Technical Math for Machine Technology and Drafting

This course is for students seeking a job in machine technology or drafting. Students work with problems similar to those found in machine trade handbooks and engineered drawings. Students solve realistic industry-related problems and use actual industrial applications that progress from simple to relatively complex. **Topics covered:** application of basic arithmetic operations of fractions and decimals, calculator, blueprint dimensions as working dimensions, formulas.

EC 239: Geometry/Trigonometry

Students who can solve basic math problems will learn advanced math skills needed to work in machine technology. The course introduces the students to the basics of geometry and trigonometry as applied to machine technology. **Topics covered:** basic geometric figures, angles, triangles, circles, basic trigonometry functions, calculating sides and angles of right triangles, practical machine applications, and calculating sides and angles of oblique triangles.

MT 105: Blueprint Reading

This course is for students with little or no knowledge of reading blueprints. Students learn to read dimensions on a blueprint, types of lines on blueprints and how to sketch a print as required for the job. Emphasis is on safety and appropriate work/class behaviors. **Topics covered:** drawings, blueprint views, blueprint information, reading dimensions on blueprints, symbols used in prints, orthographic projection, geometric dimensioning and tolerancing styles.

Machine Technology Course Descriptions

MT 107: Machine Tool I

This course prepares students with little or no machining experience for entry-level employment in the machining career field. Students learn the theories behind the different types of hand tools, measuring tools, and machine tools used. Safety, patience, and personal reliability (class attendance and participation) are emphasized. **Topics covered:** hand tools, measuring devices, conventional machine tools.

MT 108A: Machine Shop Practices

This lab prepares students with little or no machining experience to use hand tools, measuring tools, and machine tools introduced in MT 107. Safety, patience, and personal reliability (class attendance and participation) are emphasized. **Topics covered:** hand tools, measuring devices, conventional machine tools.

MT 207: Machine Tool II

This course builds on MT 107, further preparing the student in the knowledge of operating machine tools and using precision measuring. Safety, patience, and personal reliability (class attendance and participation) are emphasized. **Topics covered:** hand tools, measuring devices, machine tools (manual and CNC), welding, metalworking theory.

MT 208: Machine Shop Practices II

This lab is a continuation of MT 108A. Students continue to gain experience using hand tools, measuring tools, and machine tools commonly used in the machine technology field. Safety, patience, and personal reliability are emphasized. **Topics covered:** hand tools, measuring devices, machine tools (manual & CNC), welding, metalworking theory.

MT 210A: Basic Welding

This course is for students with a basic knowledge of operating machine tools and using precision measuring equipment. The student continues to use hand measuring and machine tools while adding welding skills. Safety, patience, and personal reliability are emphasized. **Topics covered:** continued study of hand tools, measuring devices, machine tools (manual and CNC), welding, metalworking theory.

MT 210B: Fabricating

This course is for students with a basic knowledge of operating machine tools and using precision measuring equipment. The course assists the student in developing the ability to assemble complex weldments. Safety, patience, and personal reliability are emphasized. **Topics covered:** hand tools, measuring devices, machine tools (manual and CNC), welding, metalworking theory.

MT 220: Introduction to CNC Programming

Students with no previous CNC programming learn the fundamentals of G-code and M-code programming. Focus is on the Haas controller and specific canned cycles associated with Haas machining and turning centers. Students manually program drawings and test their programs using the simulator functions of the Haas machines. **Topics covered:** G-codes and M-codes, programming sequence, X,Y,Z coordinate system.

MT 315: CAD/CAM

This course is for students with a basic knowledge of CNC programming with CAM software or CNC operations and knowledge of machine shop operations including manual lathe and mill. The course focuses on the basic applications of CNC operation, computer assisted programming using CAM software, and advanced canned program cycles. Programming focus is on the Haas milling and turning controllers with some time spent on the Anilam controller. **Topics covered:** CNC programming, CNC operations, canned cycles, CAM software functionality.

MT 320A: CNC Operations I

An introductory course for students with little or no CNC machining experience. The course focuses on the fundamentals of CNC operation of Haas milling and turning centers, and considerations of part production setup, typical controller operations, setup of tooling offsets, machine maintenance, and manual program editing. **Topics covered:** CNC operation, setting tool offsets, production setups, machine maintenance.

MT 420: CNC Machine Operator II

This course is for students with advanced knowledge of operating machine tools and using precision measuring equipment. Students prepare for entry-level employment in the machining career field using CNC machine tools and expand skills in CNC operation and programming. Safety, patience, and personal reliability are emphasized. **Topics covered:** hand tools, measuring devices, machine tools (manual and CNC), CAD/CAM, and metalworking theory.

MT 425: CAM

This course is for students with advanced knowledge of operating machine tools, using precision measuring equipment and basic knowledge of CAM software. Students expand skill sets in NC programming using CAD/CAM software, and G and M codes. **Topics covered:** 2 ½D and 3D programming, CNC operations, computer simulations of machine paths, and advanced 2D and 3D detail drawing.

Office Automation

Curriculum Guide

Program Description

The MCTI Office Automation Program has a well-equipped office automation lab that provides a realistic setting for up-to-date, hands-on training. Students spend approximately 30 hours per week maintaining and repairing office management systems, computers, copiers, printers, cash registers, fax machines, and other office equipment. Depending on interest and ability, students may also learn Webpage design and basic computer programming.

Program Admission Requirements:

- None

U.S. Department of Labor Occupational Profile:

Students who most closely match the occupational profile for a computer/office machine technician are selected for enrollment. See Appendix for definitions.

- **Aptitude/Abilities:** Above average learning ability, including mechanical reasoning and verbal/math skills. Average spatial/form perception. Demonstrated ability to logically solve problems with abstract and concrete variables, strong interpersonal communication skills and computer literate.
- **Educational Level:** 4
- **Environment:** Office
- **Physical Demands:** Medium
- **Temperament:** Able to make good judgments, multi-task and perform precision work; enjoy working with/without others.

Certificate of Completion Programs:

- Cable Installer
- Copier Servicing and Repair Technician
- Computer/Peripheral Servicing and Repair Technician
- Network Support Technician

Depending on skills, interests, and abilities, students may be in the Office Automation Program from three to seven terms. At the end of each term, the instructor invites those students who demonstrate academic progress by maintaining an accumulated grade point average of 2.0 or better and good employability skills to advance to the next term.

All Office Automation students take core courses in the first two terms. At the end of the second term, students choose a certificate track. Depending upon the certificate track chosen, students take one to five additional terms.

Students, who pass required coursework with a 2.0 or higher, are eligible to take the CompTIA certification exams. Upon successful completion of these exams (must be taken in sequence listed), the student may receive three (3) national certifications:

- A+ Computer Certification
- Network + Certification
- Security + Certification

Office Automation
Required Courses for Certification

Students must demonstrate academic progress (satisfactory grade point average) and good employability skills to advance from term to term.

Core Courses
(First and Second Term)

Course #		Credits
EC 115	Algebra	.2
OA 110	Customer Service for Technicians	.4
OA 115A	Electronics for PC Technicians	.8
OA 121	Digital Concepts/Fiber Optics	.8
Student must choose one of these courses:		
OA 103	Introduction to XHTML Programming	.6
OA 201	Electronic Device Concepts	.4

Cable Installer
(Third Term)

Course #		Credits
OA 135	Operating Systems	.6
OA 227	Network Topology Copper/Fiber Cabling	.8

Copier Servicing and Repair Technician
(Third — Fifth Term)

Course #		Credits
OA 135	Operating Systems	.6
OA 215A	Copier Fundamentals Processes/ Servicing	.4
OA 240	Equipment Servicing Applications	.2-6
Must take one of the following:		
OA 200A	Printer Servicing	.4
OA 203	Programming Logic	.6
OA 210	PC/Personal Computer Repair	.8
OA 220	Facsimile Fundamental Processes/ Servicing	.4

Computer/Peripheral Servicing and Repair Technician
(Third — Sixth Term)

Course #		Credits
OA 135	Operating Systems	.6
OA 200A	Printer Servicing	.4
OA 205	Laser (Electrostatic) Printer Servicing	.4
OA 240	Equipment Servicing Applications	.Varies
OA 260A	Computer Essentials I	.12
OA 265A	Computer Essentials II	.12
Optional Courses (Instructor Approval)		
OA 303	Introduction to VB.net	.6

Network Support Technician
(Third — Seventh Term)

Course #		Credits
OA 135	Operating Systems	.6
OA 260A	Computer Essentials I	.12
OA 265A	Computer Essentials II	.12
OA 225	Essentials of Networking	.8
OA 227	Network Topology Copper/Fiber Cabling	.8
OA 230	Introduction to Network Operation Systems	.8
Elective		.6+

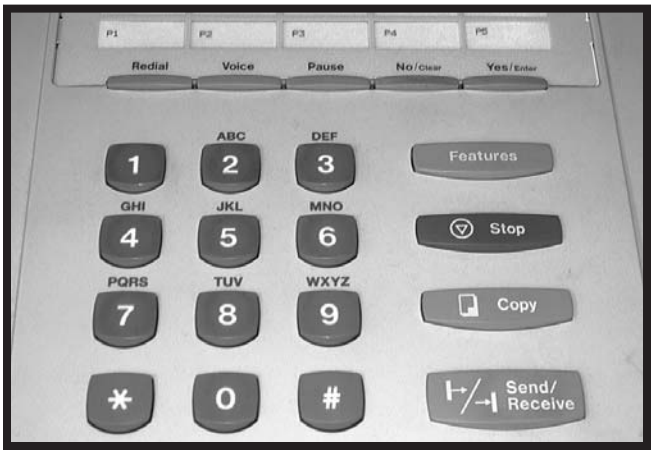
Electives
(Instructor Approval)

Course #		Credits
OA 120	Fundamental Digital Concepts	.8
OA 255	Computer Fundamental Skills	.12
OA 300	Security of Computer Networks	.6
OA 690	Work Internship	.Varies

Required Course
(Last Term)

Course #		Credits
245A	Job Search	.2

Instructors, program managers, and/or the referring counselor may recommend employability skills and elective classes based on the student's needs, abilities, interest and behaviors. Job Seeking Skills is required for all students anticipating to graduate from MCTI.



Office Automation Course Descriptions

EC 115: Algebra

Students learn basic algebra that is needed for training in any technical/vocational field or testing including GED, college entrance, civil service, and military entrance. **Topics covered:** signed numbers and order of operations, powers, roots, and scientific notation, algebraic expressions and formulas, one-step equations, multi-step equations, special equations, graphing equations, polynomials.

OA 103: Introduction to XHTML Programming

Students learn to create basic Web pages using XHTML, the new version of HTML. **Topics covered:** Internet history, HTML and XHTML, creating a page, formatting, links, making lists, adding images, tables, frames to a page.

OA 110: Customer Service for Technicians

This course is for students who will deal with customers in a business setting. Students learn to understand themselves and others and learn different techniques for dealing with various customer situations. **Topics covered:** transactional analysis, communication, perception, defensiveness.

OA 115A: Electronics for PC Technicians

This course, for students with little or no electronic experience, focuses on the fundamental and electronic concepts needed to work as a PC technician. The course prepares students for the electronic portion of the A+ exam. **Topics covered:** PC overview, safety, tools, basic electricity, electrical terms, notation, prefixes.

OA 120: Fundamental Digital Concepts

This course is for students who need more practice to master the competencies related to digital concepts. The student continues to study and apply the basic fundamentals of digital concepts, internal structure of semiconductors and operation of the logic gates. Students learn hands-on skills needed to build the actual circuits and their logic functions. **Topics covered:** linear integrated circuits, digital IC gate circuits, advanced power supply, op amps, digital IC decoders, oscillators, multi-vibrators, solid state switches, 555 timers.

OA 121: Digital Concepts/Fiber Optics

This course is for students who have a basic understanding of electronics. Students build understanding of digital IC circuitry internal components and troubleshooting skills as related to basic digital circuits. The course progresses from the basic fundamentals of digital circuits and how information is interpreted in the computers to analyzing each circuit by building and demonstrating the actual circuits and their logic functions. **Topics covered:** linear integrated circuits, digital IC gate circuits, advance power supply, op amps, digital IC decoders, oscillators, multi-vibrators, solid state switches, 555 timers.

OA 135: Operating Systems

An overview of beginning — to advanced operating systems, including intermediate and advanced command-line instructions and GUI navigation for Windows 9X, NT Workstation 4.0, 2000 Professional, XP Professional, and Linux. Students learn how to set up/configure, navigate a PC, manage requirements, manage a hard drive, optimize system resources, and install/remove applications. **Topics covered:** introduction to operating systems, how they work, installation, configuration and functionality of various operating systems.

OA 200A: Printer Servicing

This course is for students with knowledge and experience in electronics and testing equipment usage. It covers troubleshooting techniques involved in servicing printers and preventative maintenance. **Topics covered:** fundamental processes, operational features and terminology, self-test, setup and configuration.

OA 201: Electronic Device Concepts

This course covers maintenance of computer and peripheral equipment. Focus is on operational and servicing elements of computer printing devices. Students apply various tools and test equipment, basic shop procedures, safety practices, and customer relations skills while servicing equipment. **Topics covered:** cash registers, copiers, fax machines.

OA 203: Programming Logic

Students learn how to design computer programs. Emphasis is on the theory of computer programming and good program design. **Topics covered:** history and design of computers, developing programs, doing math in a program, getting correct/precise results, built-in functions, structured programming, top-down design, writing efficient code, and debugging methods.

Office Automation Course Descriptions

OA 205: Laser (Electrostatic) Printer Servicing

This course is for students with knowledge and experience in electronics and testing equipment usage. It covers the preventive maintenance and servicing of laser printing equipment. **Topics covered:** fundamental processes, operational features and terminology, self-test, setup and configuration.

OA 210: PC/Personal Computer Repair

This intensive hands-on applications course focuses on servicing computer systems. Students build skills needed for servicing, maintaining, and repairing computer systems and associated software. Emphasis is placed on performing preventive maintenance, applying the use and care of various tools and equipment while learning basic shop procedures, safety practices and customer relations skills. **Topics covered:** error codes, software diagnostics, configuration, setup, interfacing, upgrading peripheral devices, XP Advanced Options, video, CD-ROM, monitors.

OA 215A: Copier Fundamentals Processes/Servicing

This course familiarizes students with the fundamental processes of copier equipment. The course focuses on the theory and copier process steps. During the course, students analyze each step. Emphasis is placed on copier components and the uses of each component in the copier process. **Topics covered:** operations, setup and configuration, parts identification, theory, process steps, connectivity, maintenance, diagnostics.

OA 220: Facsimile Fundamental Processes/Servicing

This course familiarizes students with the fundamental processes of FAX equipment, operations, setup and installation, preventive maintenance, and basic servicing of equipment. **Topics covered:** operations, setup and configuration, parts identification, process steps, connectivity, preventive maintenance, service and diagnostics.

OA 225: Essentials of Networking

Students learn skills to interconnect computer devices and peripheral equipment, maintain a NOS, and associated LAN equipment. Students perform preventive maintenance, apply the use/care of various techniques, diagnostic utilities, and equipment; learn basic shop procedures, safety practices and customer relations skills. **Topics covered:** four elements of networking technologies and concepts: media and topologies, protocols and standards, network implementation, and network support; CompTIA Network+ objectives for exam # N10-002.

OA 227: Network Topology Copper/Fiber Cabling

This hands-on course is for students to learn how to incorporate data and voice cable standards currently used in the telecommunication industry when working at a job site. Students learn how to document all work, media, and transmission types. Emphasis is on communication and safety. **Topics covered:** network theory and components, cable installation, voice installations, testing, optical fiber installation.

OA 230: Introduction to Network Operation Systems

This course provides students with a comprehensive understanding of network operating systems. It prepares students to tackle server administration while applying their knowledge through hands-on projects and case study assignments. **Topics covered:** selecting server and client hardware, installing and configuring a server, setting up and managing network printing services, establishing remote access services, interoperating on a network, setting up for the Internet, monitoring and tuning a server, troubleshooting problems.

OA 240: Equipment Servicing Applications

Students apply theoretical concepts of trouble-shooting to repair customer(s) equipment. **Topics covered:** troubleshooting computer post-error codes to lowest replaceable module (LRM), software diagnostics, configuration, setup, interfacing, and upgrading peripheral devices on all types of office equipment and devices.

OA 245A: Job Search

This course introduces students to information on placement services and resources available on- and off-campus to help obtain employment. **Topics covered:** job seeking techniques, completing online applications, resume writing, researching a job/company, job interviewing strategies, ABC's of networking, identifying key skills.

Office Automation Course Descriptions

OA 255: Computer Fundamental Skills

This course is designed for students who need more practice to master and become proficient in the skills related to A+ Core Hardware and Operating Systems. Emphasis is placed on the hands-on techniques needed to install, troubleshoot, and support personal computers. Students solve simulated real world problems and issues related to operating systems, making it a practical preparation for real world employment. **Topics covered:** recordkeeping, construction skills, system and software comprehension, and consumer maintenance and troubleshooting.

OA 260A: Computer Essentials I

This course prepares students for the Comp TIA A+ Essentials certification (2006 objectives). Students perform fundamental techniques in operation, building, configuration, preventative maintenance, interfacing, upgrading, and troubleshooting of PC/personal computers and peripheral devices. Hands-on service and maintenance of computer equipment for students seeking to become entry-level IT professionals. **Topics covered:** desktop/laptop configuration, set up, interfacing, upgrading, and troubleshooting of PC/personal computers, functional processes of printing devices (Dot Matrix, Inkjet, and Laser), and techniques for maintaining and servicing this equipment.

OA 265A: Computer Essentials II

This course prepares students for the CompTIA A+ 220-602, 220-603 exams (2006 objectives). Course is for students seeking to become information technology (IT) technicians or remote desktop/helpdesk support for the IT industry. The business setting, customer support, troubleshooting and servicing of computer and peripheral equipment at the intermediate and advanced levels. **Topics covered:** configuration of Windows operating systems; analyzing boot processes; supporting hardware and software; customer service in IT industry; troubleshooting malfunctioning computer devices.

OA 300: Security of Computer Networks

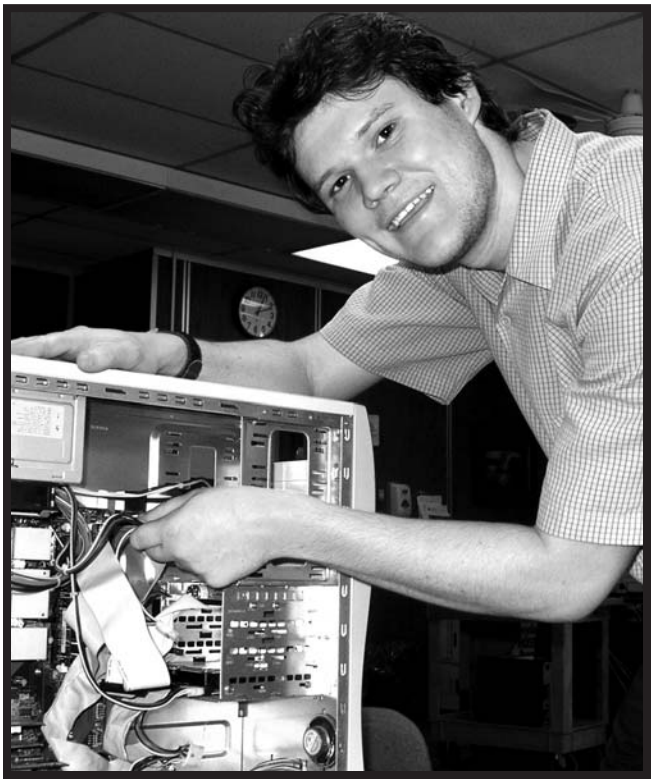
This highly interactive course is for students interested in maintaining network computers. Students learn skills required to implement and monitor basic security services on any type of network and computer system, and respond to security breaches. **Topics covered:** security threats, secure systems and devices, network communication, PKI, certificates, organizational security policies, security infrastructure.

OA 303: Introduction to VB.net

A hands-on course for students interested in learning how to use Visual Basic to design basic Windows-type programs. The course focuses on making programs with a Windows style graphical user interface. **Topics covered:** VB.net, layout forms, controls, properties, add code to get results.

OA 690: Work Internship

This course is for students enrolled in the Office Automation program who want/need real-work experience prior to accepting a full-time job. Internships provide students with an opportunity to apply skills learned in school in a workplace setting to evaluate themselves as a worker and potential employee. Internships provide experience that help build confidence in abilities.



Retail Marketing

Curriculum Guide

Program Description

The MCTI Retail Marketing Program operates the Eagle Shack, the on-campus store. Students learn customer service/personal selling, cash handling, inventory control, merchandising, and promotion/advertising.

Program Admission Requirements:

- None

U.S. Department of Labor Occupational Profile:

Students who most closely match the occupational profile for a cashier are selected for enrollment. See Appendix for definitions.

- **Aptitude/Abilities:** Average verbal and math skills, clerical perception, low to fair manual dexterity, effective interpersonal relations
- **Educational Level:** 3
- **Environment:** Store
- **Physical Demands:** Light to Medium
- **Temperament:** Is able to multi-task, perform precision work and likes to work with people.

Certificate of Completion Programs:

- Stock Clerk
- Cashier
- Sales Associate
- First-Line Supervisor

Retail Marketing is a two-term program and students are expected to complete both terms.

At the end of the first term, the instructor invites those students who demonstrate academic progress by maintaining a grade point average of 2.0 or better and good communication skills to advance to the second term. Depending on the student's skills, abilities and interests, the student may work toward the Cashier certificate or the Sales Associate certificate.

Only one student per term is selected to advance to the third term (paid co-op) and earn the First-Line Supervisor certificate. The student receives on-the-job training and assists the instructor in the day-to-day operation of the school store.

Those students who have successfully completed the first term with an accumulated grade point average of 2.0 and good employability skills, and are unable to continue to the second term may receive the Stock Clerk certificate.

Retail Marketing
Required Courses for Certification

Students must demonstrate academic progress (satisfactory grade point average) and good employability skills to advance from term to term.

Stock Clerk
(First Term)

Course #		Credits
RM 101	Cashiering I	4
RM 102	Customer Service	3
RM 105	Inventory	2
RM 106	Protect Company Assets	1
EC 118	Retail Marketing Math	2

Cashier
(Second Term)

Course #		Credits
RM 201	Personal Selling	2
RM 204	Keeping Up Appearances	1
RM 207	Cashiering II	5
RM 208	Store Operation Support	2
RM 209A	Student Co-op Program	2

Sales Associate
(Second Term)

Course #		Credits
RM 201	Personal Selling	2
RM 204	Keeping Up Appearances	1
RM 209A	Student Co-op Program	2

Must take at least 7 more credits from:

RM 207	Cashiering II	5
RM 212	Day Supervisor	4
RM 213	Merchandizing	2
RM 214	Store Operations	2
RM 215	Promotions	2

First-Line Supervisor
(Third Term — one student only)

Course #		Credits
RM 305	First-Line Supervisor of Retail Sales Worker	12

Instructors, program managers, and/or the referring counselor may recommend employability skills and elective classes based on the student's needs, abilities, interest and behaviors. Job Seeking Skills is required for all students anticipating to graduate from MCTI.

Retail Marketing Course Descriptions

RM 101: Cashiering I

This course is for beginning retail marketing students. Students develop cashiering and cash handling skills that are required for a successful career in retail marketing. Students will run a cash register and handle different types of transactions. **Topics covered:** how to run a cash register, preparing the cash drawer, handling change, balancing the cash drawer, sales and credit card transactions, sales tax, discounts, and markdowns.

RM 102: Customer Service

This course is for beginning retail marketing students. Students learn the national standards for customer service and prepare to take the national certification exam. **Topics covered:** getting to know the customer, meeting the customers' needs, building a continuing relationship, and going the "extra mile."

RM 105: Inventory

Students with little/no experience in retail marketing learn the national standards for monitoring inventory. Students learn how inventory procedures affect the profitability of a store, and how inventory related tasks play a large role in providing good customer service. **Topics covered:** inventory procedures (e.g., transferring inventory).

RM 106: Protect Company Assets

Students with little/no experience in retail marketing learn how to help protect a company's many assets, including customers and employees, inventory, money, buildings and property, and equipment and furnishings. **Topics covered:** shrinkage, security devices, monitoring merchandise, suspicious customers, and following safety procedures.

EC 118: Retail Marketing Math

Retail Marketing students use basic math skills to solve business problems. This highly participatory class prepares students to efficiently calculate change, determine prices or taxes, and determine earnings in a retail-marketing environment. Basic math skills required. It also focuses on problem-solving issues related to retail marketing. **Topics covered:** percents to decimals, decimals to percents, sales tax, total sales, making change, discounts, commission earnings, sales forms.

RM 201: Personal Selling

This course is for students with some retail marketing experience and focuses on developing effective personal skills to sell a product. Students develop good listening skills and questioning techniques to determine customer needs. **Topics covered:** communication skills, listening, open-ended questions, explaining features and benefits, demonstrating and testing products, initiating and creating special promotions, advertising, handling customer objections, looking for buying signals to close the sale.

RM 204: Keeping Up Appearances

This course is for students with some retail marketing experience and focuses on creating positive first impressions that show quality, desirability, value, and other traits that drive repeat business. **Topics covered:** maintaining the sales floor, stockroom, and displays.

RM 207: Cashiering II

This course is for advanced retail marketing students. Students become proficient at cashiering and handling cash. Students must demonstrate proficiency in these skills to earn a cashier certificate. **Topics covered:** preparing and balancing the cash drawer, handling change, balancing inventory sheet to cash box.

RM 208: Store Operation Support

This course is for advanced retail marketing students. The course expands a student's knowledge of daily operations of a retail establishment and focuses on working effectively in teams to complete a task under supervision. **Topics covered:** teamwork, time management, following directions, customer service skills; supporting supervisor with handling invoices, ordering products, scheduling, verification of cash registers, deposits, promotions.

RM 209A: Student Co-op Program

This course is for advanced retail marketing students. The course is students additional opportunity to apply employability skills in the school store or in other retail settings. **Topics covered:** employability skills.

Retail Marketing
Course Descriptions

RM 212: Day Supervisor

This course is for advanced retail marketing students. Students develop abilities to lead and manage people. **Topics covered:** leadership skills, role modeling, communication skills, attitude, team building skills.

RM 213: Merchandizing

This course is for advanced retail marketing students. Students learn point of sale software to monitor all aspects of inventory in a retail establishment. **Topics covered:** purchasing, handling invoices, damaged goods, physical inventory.

RM 214: Store Operations

This course is for advanced retail marketing students. Students learn skills needed to run financial and daily operations of a retail establishment. **Topics covered:** verification of cash drawers, daily deposits, scheduling employees, sales reports.

RM 215: Promotions

This course is for advanced retail marketing students. Students learn how promotions can build customer base and directly affect sales. **Topics covered:** types of media, information in promotion, monitoring sales during the promotion.

RM 305: First-Line Supervisor of Retail Sales Worker

This course is designed for advanced retail marketing students who show strong leadership skills. This is a paid cooperative experience for the student to work in a supervisory position in the school store. The student receives on-the-job training and assists the instructor in the day-to-day operation of the school store. **Topics covered:** staffing, training, supervising.

Appendix

National Reporting Systems (NRS) Implementation Guidelines

The National Reporting System for Adult Education (NRS) is the accountability system for the federally funded adult education program mandated by the Workforce Investment Act (WIA). WIA required a system of outcome measures and performance standards for adult education programs, which led to the formal adoption of the NRS. NRS is administered by the Division of Adult Education and Literacy in the Office of Vocational and Adult Education at the U.S. Department of Education. (www.nrsweb.org)

Educational Level — Test Scores

	2 – Beginning Basic	**3** – Low Intermediate Basic	**4** – High Intermediate Basic
TABE	(7 – 8 and 9 – 10) scale scores (grade level 2 – 3.9): Reading: 368 – 460 Total Math: 314 – 441 Language: 390 – 490	(7 – 8 and 9 – 10) scale scores (grade level 4 – 5.9): Reading: 461 – 517 Total Math: 442 – 505 Language: 491 – 523	(7 – 8 and 9 – 10) scale scores (grade level 6 – 8.9): Reading: 518 – 566 Total Math: 506 – 565 Language: 524 – 559
CASAS	Scale scores: Reading: 201 – 210 Math: 201 – 210 Writing: 01 – 225	Scale scores: Reading: 211 – 220 Math: 211 – 220 Writing: 226 – 242	Scale scores: Reading: 221–235 Math: 221–235 Writing: 243 –260
ABLE	Scale scores (grade level 2–3.9): Reading: 525 – 612 Math: 530 – 591	Scale scores (grade level 4 – 5.9) Reading: 613 – 644 Math: 593 – 641	Scale scores (grade level 6 – 8.9) Reading: 646 – 680 Math: 643 – 693
Work Keys	Scale Scores: Read for Information: 65 – 72 Writing: 67 – 71 Applied Mathematics: 65 – 70	Scale Scores Read for Information: 73 – 74 Writing: 72 – 77 Applied Mathematics: 71 – 74	Scale Scores: Read for Information: 75 – 78 Writing: 75 – 77 Applied Mathematics: 75 – 77

TABE = Test of Adult Basic Education, CASAS = Comprehensive Adult Student Assessment System,
ABLE = Adult Basic Learning Examination, WorkKeys® = ACT Job Skills Assessment

Educational Level — Descriptions

Reading and Writing

2–Beginning Basic	3–Low Intermediate Basic	4–High Intermediate Basic
Individual can read simple material on familiar subjects and comprehend simple and compound sentences in single or linked paragraphs containing familiar vocabulary; can write simple notes and messages on familiar situations but lacks clarity and focus. Sentence structure lacks variety, but individual shows some control of basic grammar (e.g., present and past tense) and consistent use of punctuation (e.g., periods, capitalization).	Individual can read text on familiar subjects that have a simple and clear underlying structure (e.g., clear main idea, chronological order); can use context to determine meaning; can interpret actions required in specific written directions; can write simple paragraphs with a main idea and supporting details on familiar topics (e.g., daily activities, personal issues) by recombining learned vocabulary and structures; and can self and peer edit for spelling and punctuation errors.	Individual can read simple descriptions and narratives on familiar subjects or from which new vocabulary can be determined by context and can make some minimal inferences about familiar texts and compare and contrast information from such texts but not consistently. The individual can write simple narrative descriptions and short essays on familiar topics and has consistent use of basic punctuation but makes grammatical errors with complex structures.

Numeracy

2–Beginning Basic	3–Low Intermediate Basic	4–High Intermediate Basic
Individual can count, add, and subtract three digit numbers, can perform multiplication through 12, can identify simple fractions, and perform other simple arithmetic operations.	Individual can perform with high accuracy all four basic math operations using whole numbers up to three digits and can identify and use all basic mathematical symbols.	Individual can perform all four basic math operations with whole numbers and fractions; can determine correct math operations for solving narrative math problems and can convert fractions to decimals and decimals to fractions; and can perform basic operations on fractions.

Functional and Workplace Skills

2–Beginning Basic	3–Low Intermediate Basic	4–High Intermediate Basic
Individual is able to read simple directions, signs and maps, fill out simple forms requiring basic personal information, write phone messages, and make simple changes. There is minimal knowledge of and experience using computers and related technology. The individual can handle basic entry level jobs that require minimal literacy skills; can recognize very short, explicit, pictorial texts (e.g., understands logos related to worker safety before using a machine); can read want ads and complete simple job applications.	Individual can handle basic reading, writing, and computational tasks related to life roles, such as completing medical forms, order forms, or job applications, and can read simple charts, graphs, labels, and payroll stubs and simple authentic material if familiar with the topic. The individual can use simple computer programs and perform a sequence of routine tasks given directions using technology (e.g., fax machine, computer operation). The individual can qualify for entry level jobs that require following basic written instructions and diagrams with assistance, such as oral clarification, can write a short report or message to fellow workers; and can read simple dials and scales and take routine measurements.	Individual can handle basic life skills tasks such as graphs, charts, and labels and can follow multi-step diagrams; can read authentic materials on familiar topics, such as simple employee handbooks and payroll stubs; can complete forms such as a job application and reconcile a bank statement. Can handle jobs that involve following simple written instructions and diagrams; can read procedural texts, where information is supported by diagrams, to remedy a problem, such as locating a problem with a machine or carrying out repairs using a repair manual. The individual can learn or work with most basic computer software, such as using a word processor to produce own texts, and can follow simple instructions for using technology.

Physical Demands (Strengths)

S—Sedentary Work — Exerting up to 10 pounds of force occasionally (Occasionally: activity or condition exists up to one-third of the time) and/or a negligible amount of force frequently (Frequently: activity or condition exists from one-third to two-thirds of the time) to lift, carry, push, pull, or otherwise move objects, including the human body. Sedentary criteria are met.

L—Light Work — Exerting up to 20 pounds of force occasionally, and/or up to 10 pounds of force frequently, and/or a negligible amount of force constantly (Constantly: activity or condition exists two-thirds or more of the time) to move objects. Physical demand requirements are in excess of those for sedentary work. Even though the weight lifted may be only a negligible amount, a job should be rated light work: (1) when it requires walking or standing to a significant degree; or (2) when it requires sitting most of the time but entails pushing and or pulling of arm or leg controls; and/or (3) when the job requires working at a production rate pace entailing the constant pushing and/or pulling of materials even though the weight of those materials is negligible. NOTE: The constant stress and strain of maintaining a production rate pace, especially in an industrial setting, can be and is physically demanding of a worker even though the amount of force exerted is negligible.

M—Medium Work — Exerting 20 to 50 pounds of force occasionally, and/or 10 to 25 pounds of force frequently, and/or greater than negligible up to 10 pounds of force constantly to move objects. Physical demand requirements are in excess of those for light work.

H—Heavy Work — Exerting 50 to 100 pounds of force occasionally, and/or 25 to 50 pounds of force frequently, and/or 10 to 20 pounds of force constantly to move objects. Physical demand requirements are in excess of those for medium work.

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